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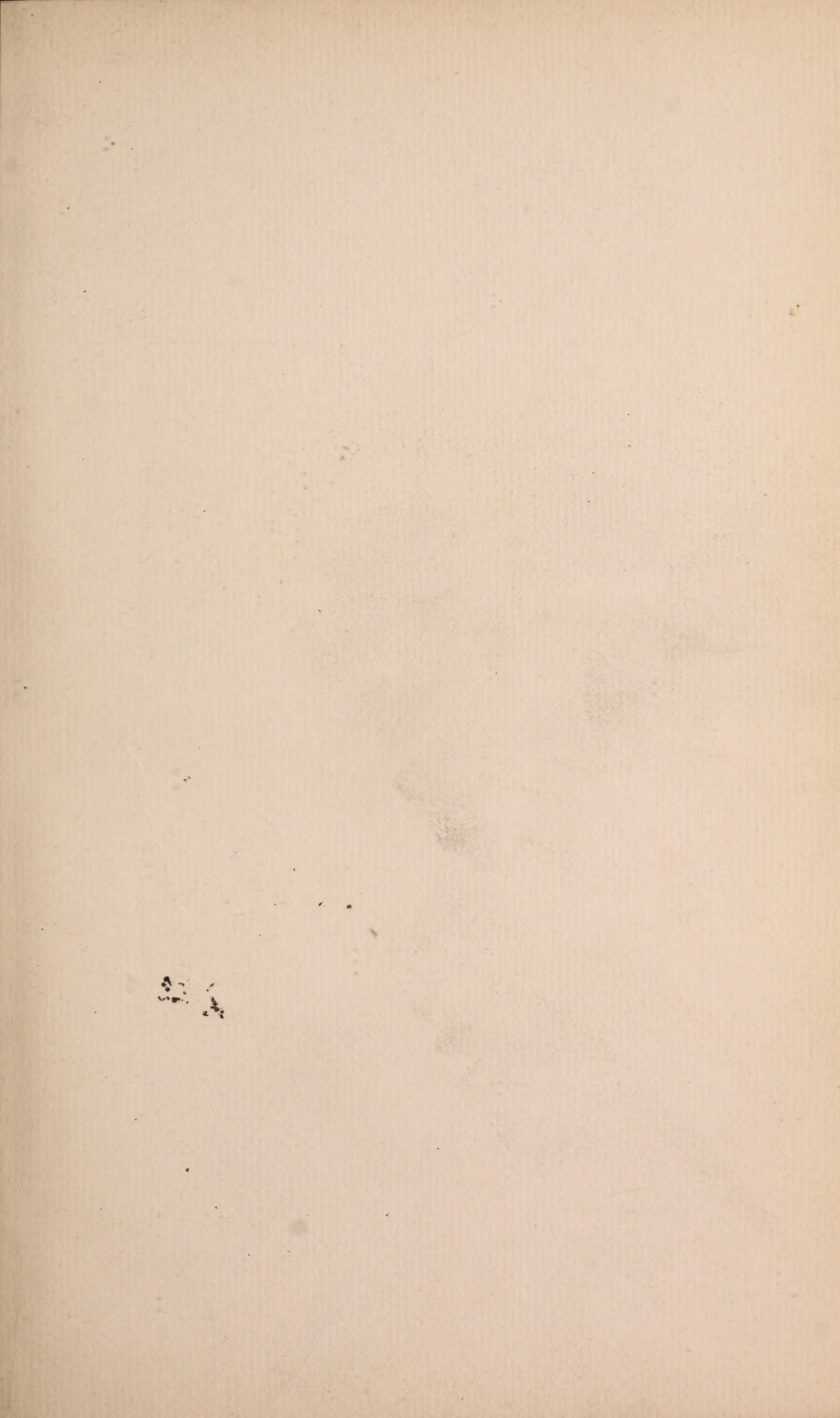



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ALBANY MEDICAL ANNALS

Journal of the Alumni Association of the
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VOLUME XXVIII

Ἀσφαλὲς καὶ ἔμπεδον ἔστω τὸ σὸν ἔδος. Ἐκ σκότου μὲν ἔξαγε
φάος, ἐκ δὲ πάθους ἀναψυχὴν



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CONCERNING THE PRODUCTION OF CYTOTOXIC
SERA BY THE INJECTION OF NUCLEOPROTEIDS.*

BY RICHARD M. PEARCE, M. D.

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AND

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This investigation was incited by the publication of Beebe's studies¹ which describe the production of specific cytotoxic sera for the liver, kidney and pancreas as the result of treating animals with the respective nucleoproteids of these organs. As one of us² had previously made a somewhat extensive study of cytotoxic sera prepared by the injection of various somatic cells, and had reached conclusions which did not justify the views then current concerning the specificity of these bodies, it seemed advisable, in view of Beebe's very definite results, to further pursue these studies.

THE DEVELOPMENT OF OUR KNOWLEDGE OF THE CYTOTOXINS.

It may not be out of place to interpolate here a few words concerning the very definite change in opinion which has occurred during the past few years concerning the specificity of the cytotoxins. Shortly after the early publications of Ehrlich and his associates concerning the production of immune hemolysin, a vast number of publications describing specific sera for practically all cells of the body appeared in rapid succession. In most of these studies an attempt was made to demonstrate a specificity according to morphological rather than receptorial affinity in disregard of the very clear and definite statement of Ehrlich and Morgenroth. Those who denied a morphological specificity based their opinion on the observation that by the injection of cells, as those of the testicle, apparently free from blood, there resulted not only an antiserum for these cells, but also an hemolysin. This was explained by those who believed in morphological specificity by assuming that a number of red blood corpuscles, sufficient to produce a hemolysin, had been injected with the semen. Later, however, the production by a large number of investigators of hemolysin by the injection of fluids entirely free from red corpuscles, as serum and urine, demonstrated the production of antibodies from free

* Conducted under a grant from the Rockefeller Institute for Medical Research. Read before the Section in Pathology of the British Medical Association, Toronto, August 21, 1906. Published also in *Jour. Infect. Dis.*, 1906 iii, 742.

receptors and firmly established Morgenroth's contention that specificity is a matter, not of cells, but of receptors. Despite these very conclusive demonstrations later investigators, who attempted to produce antisera for the cells of various organs, continued to use emulsions of unwashed organs in utter disregard of the presence of free receptors in the organ juices and also without consideration of the antibodies certain to be produced by the red cells normally present. That sera so produced possessed very definite hemolytic and hemagglutinative properties capable of producing lesions (hemoglobinuria, thrombosis, liver necroses) which might erroneously be ascribed to the supposedly specific body was first suggested by Pearce¹ in a study of nephrotoxins and later² definitely demonstrated by a study of the action of sera prepared from the liver, kidney, pancreas, and adrenals completely freed from blood by prolonged washing through the blood vessels. Further, the study of sera so prepared and also of sera resulting from the injection of blood serum, bile, and urine, led to the conclusion that "the cells of various organs of the body have, while differing in morphology and function, certain receptor characteristics in common, and that one type of cell may therefore produce antibodies affecting several cells of differing morphology but with like receptor groups." Specificity in the morphological sense could not be demonstrated.

Other investigations with sera prepared from washed organs, especially those of Portis⁴ (antithyroid serum) and Woltmann⁵ also indicate the non-specificity of the cytotoxins.

Thus, while the study of the cytotoxins has aided and may still aid in the development of our knowledge of immunity and has incidentally offered several valuable methods of experimentally reproducing pathological conditions, it is evident that the sera produced by the injection of mixtures of organ cells have not a degree of specificity sufficient to warrant their further study in the hope of developing therapeutic methods.

IMMUNIZATION TO NUCLEOPROTEIDS.

In order to prevent the adventitious formation of those bodies resulting from impure methods of immunization and also in the hope of obtaining greater specificity, a few investigators have utilized the proteid constituents of the cell.

Such attempts to produce antisera for somatic cells are limited, so far as we are aware, to those made by Marrassini,⁶ Bierry⁷ and his associates, and by Beebe. Of these studies the most comprehensive and most recent is that of Beebe.

Marrassini, working with the rabbit and guinea-pig, studied the effect of serum prepared by injecting rabbit's liver nucleoproteid. The changes resulting were, in general, degenerative in nature and similar to those caused by direct injection of the nucleoproteid itself, but usually more severe. The serum affected not only the organ for which it would be assumed it had an affinity, but also, to a greater extent, the kidney. Marrassini concludes that the action of a cytotoxin is of the same nature as that of other poisons of general action, such as potassium chromate, vinylamin, and pyrogallie acid, which are predisposed to affect more especially the excretory organs.

The experiments of Bierry and his associates are few in number and reported but meagerly. In the first communication Bierry describes the action of a serum prepared by injecting rabbits with the nucleoproteids of the dog's kidney. The injection of 20 to 24 c.c. of the serum into the peritoneal cavity of a dog weighing 12 to 15 kilos caused, after three or four days, an albuminuria which reached its maximum on the 10th to the 15th day. The number of experiments is not stated, but mention is made of one dog in which an albuminuria persisted for one and a half months.

Later in association with Pettit, Bierry made a comparison between the action of liver and kidney nucleoprotein sera. Each was found to cause albuminuria and degenerative changes in both liver and kidney, but the kidney serum produced a more severe albuminuria and more marked histological changes in the kidney than did the liver serum. The lesions of the kidney are described as interstitial hemorrhage, congestion of the glomeruli, and granular degeneration of the cells of the tubules with granular tube casts; and those of the liver as congestion and granular and vacuolar degeneration. The authors concluded that the action of such sera is more energetic upon the organ from which the nucleoprotein is derived, but that there is also a definite action on other organs.

In the third investigation Bierry, assisted by Mayer, made a special study of the urine of dogs receiving a liver nucleoprotein serum. They found biliary pigments, lactic acid, and homogentisic acid and demonstrated that, in some instances, the urine had a marked reducing power not due to the presence of dextrose. By various experiments they were able to produce a condition which they considered analogous to alimentary glycosuria and due to the changes produced in the liver by the serum. The histological changes in the liver were those of granular degeneration and fatty transformation. The kidney and pancreas were normal. Albuminuria occurred in two animals, but was slight and transitory. These results appear to contradict those given by Bierry and Pettit in the earlier communication.

Beebe prepared a serum by injecting thymus nucleohiston of the calf which gave precipitin tests for both nucleohiston and nucleoprotein of the thymus. The more important sera were those prepared by treating rabbits with the nucleoproteids of the liver, kidney, and pancreas of the dog. These all gave definite precipitin tests with their respective nucleoproteids and caused agglutination of cell mixtures, but had no lytic action upon the same. They were all markedly hemolytic and hemagglutinative *in vitro* in dilution up to one to five, but did not cause hemoglobinuria when injected into animals.

In testing their cytotoxic action *in vivo* intraperitoneal injections of 2 c.c. per kilo of body weight were usually employed. The kidney serum caused albuminuria and acute degeneration of the kidney without changes in other organs. Albuminuria appeared generally on the fourth or fifth day, increased in amount rapidly and was accompanied by the excretion of abundant hyaline and granular casts.

The liver serum caused granular and fatty changes and focal necroses of the liver with no changes in other organs or in the urine.

The urine of animals receiving pancreas serum caused what Beebe considers a partial reduction of Fehling's solution—"the formation of an abundant green precipitate, but not the typical red deposit of cuprous oxide." Albuminuria did not occur. Histological examination of the liver, kidney, and spleen revealed no changes; a study of the pancreas was impossible on account of imperfect fixation.

The results of these experiments (five with nephrotoxin, three with hepatotoxin and two with pancreas antiserum) provide, Beebe states, "strong indications that cytotoxic sera having a high degree of specificity can be prepared from the nucleoproteids of tissues," and that it is possible "to make a serum which will act primarily on one organ." Further comment on the work of Beebe will be made in the discussion of our own results.

METHODS.

As the amount of detail involved in work of this character is very great, it was considered advisable to limit our investigation to the study of two sera rather than to a superficial study of several. As physiological disturbances are the most satisfactory indications of the injurious action of a serum, antisera were prepared for the kidney and pancreas. The experience of practically all investigators that nephrotoxin is more nearly specific than other sera and the statements of Bierry and Mayer and that of Beebe concerning reducing substances in the urine also influenced this decision.

Rabbits, in groups of three, received in the peritoneal cavity five injections of the nucleoproteids of the dog's kidney and pancreas at intervals of five to seven days; after an interval of ten days the animals were bled. The serum thus produced was injected intravenously into dogs which had been under observation for considerable periods of time and the urine of which had been carefully examined daily.

As a control of the supposedly specific nucleoproteid sera, in order to determine if nucleoproteid serum may not have a general toxic action on animals other than that from which the nucleoproteid was prepared, rabbits were injected with the nucleoproteid* of the pancreas of the cow and the effect of this serum was tried on the dog.

As a further control, and in order to determine also whether or not antisera for nucleic acids could be obtained, rabbits were injected with the nucleic acids of the dog's pancreas and kidney.

The preparation of the nucleoproteids.—In the preparation of the nucleoproteids we have employed one of the methods recommended by Levene. This seemed particularly advantageous for two reasons. In the first place the heating of the glands to the boiling-point effectually eliminates all possibility of future autolysis, while on the other hand, the increased ease with which the solutions filter decreases the time of preparation. We are fully aware that the various nucleoproteids respond with different

* For this material we wish to thank Professor J. A. Mandel, of the University and Bellevue Hospital Medical School.

degrees of ease to extraction, but the point we had in view was not to obtain the maximum yield of material, but to endeavor to produce in the shortest time the purest product possible.

Emphasis must be laid upon the fact that only blood-free organs were employed. In this direction extreme care was exercised since the exclusion of all proteids of blood origin must be of prime importance where specific gland products stand in question. By inserting a cannula into the aorta below the renal arteries and laying a ligature above the coeliac axis, an irrigation of $\frac{22}{7}$ NaCl solution was established by means of which the

blood was thoroughly removed from the organs. The blood-free organs immediately removed from the animal and cut into fine pieces were pressed with a mortar and pestle through a fine-mesh sieve and the finely comminuted material mixed with from two to four times its weight of water. The gland in suspension was then brought to the boiling-point in an Erlenmeyer flask of appropriate size. After allowing the mixture to cool it was quickly filtered through a double-folded filter. The first few cubic centimeters of filtrate, invariably turbid, were thrown on the filter again until a clear fluid resulted. The product of from one to two hours' filtration might be said roughly to correspond to the amount employed in each preparation. To this was then added acetic acid until complete precipitation resulted, the amount necessary varying according to the kind of nucleoproteid. Under ordinary circumstances the nucleoproteid separated out as a fine white flocculent precipitate; only once did it become necessary to add alcohol to bring about the precipitation of this character. This precipitate was washed with distilled water by sedimentation until the washings did not respond to the biuret reaction. This procedure in the absence of a centrifuge such as that described by Beebe was accomplished in four to five hours. In order to hasten the process, siphonage of the supernatant fluid took place before complete sedimentation had been accomplished even at the risk of loss of material. The material was then suspended in water and put into solution with the smallest possible amount of sodium carbonate; the resultant solution when filtered gave a clear filtrate which was reprecipitated with acetic acid, washed several times by decantation, and dehydrated with alcohol and ether. The products were white powders. That derived from the pancreas contained 1.74 per cent P; from the kidney 2.10 per cent P.

Just previous to each injection the required amount of the powder was weighed out and dissolved in an appropriate amount of sterilized 0.5 per cent sodium carbonate into which solvent it passed readily.

It seemed to us distinctly disadvantageous that the substance should be kept in solution for any length of time even by employing cold or antiseptics as precautions against autolysis or bacterial action. That changes of a certain character do take place under such circumstances is evidenced by the fact that Beebe noticed that a fine deposit settled out in his solutions after some weeks. In only one instance in our investigation was the injection made later than a few hours after preparation of the solution. It would be hard to give absolute figures of the actual time consumed in the preparation of the various products. Excluding the

period of cooling over night, when the gland stood in a condition free from the possibility of autolysis, the procedure occupied 15 hours, most of which time, however, the material was suspended in water. This period, especially in view of the fact of the initial stoppage of autolysis, would not allow sufficient time for change of the character so guarded against by Beebe. In our opinion this precaution is undoubtedly necessary, but not of the extreme importance assumed by him. The freedom of the products from blood or protoplasmic proteid impurities would seem to be the goal for which to aim.

If, with Kossel, we assume that the present nucleoproteids or nucleins are in part laboratory products not originally present in the cell but formed in the process of the separation, the proteid moiety of the compound must be derived from protoplasmic substance as distinct from the chromatin, but not necessarily different from the cell proteids (globulins or albumins). If such is the case the question as to the specificity of nucleoproteids as such must be ruled out and the proper direction to train investigation would be to attempt to prepare antibodies from various cell-proteids or nucleic acids prepared as pure as possible. The former point we still have in mind. As Beebe states, from the analysis of his preparations it is evident that the products employed by him are not true nucleoproteids but nucleins, and the molecule of the so-called protein nucleate possesses relatively less of the proteid and more of the nucleic acid radical. He also mentions that the color proteid reactions were given in only a feeble way. Certainly it would seem that the results obtained by the use of such products should be ascribed more probably to the nucleic acid than to the proteid radicals.

The products prepared by us contained less phosphorus than his, pointing to a higher proteid content, and gave characteristic results when tested with Millons, biuret, Adamkiewicz, and Molisch reactions. These reactions could not be ascribable to cell-globulins, which were removed in the process of preparation.

It seems rather dangerous to draw conclusions as to the intravenous clotting obtained when products prepared from organs containing blood are injected in the blood stream. The possibility is always at hand of the presence of fibrin ferment, thrombin, nucleohiston, or whatever may be the agent active in setting about the changes which result in the formation of fibrin in the blood. It is, we think, at present questionable whether it has yet been definitely shown that nucleoproteid, absolutely free from contamination of blood in the general sense, will cause intravenous clotting.

The preparation of the nucleic acids.—The method employed for the preparation of the nucleic acids from the pancreas and the kidney of the dog was essentially that of Levene. The finely comminuted gland was boiled for two hours in a 5 per cent solution of sodium chloride after which sodium acetate in the proportion of 7 per cent of the weight of the fresh glands was added and the mixture allowed to cool. Sodium hydroxide was next added in excess and the material allowed to stand over night. After the reduction of the greater part of the alkalinity with acetic acid the faintly alkaline mixture was precipitated with an excess

of picric acid and acetic acid carefully added until a well-formed flocculent precipitate settled out. This filtered quickly. The amount of acetic acid necessary at this point varies according to the kind of nucleic acid. The proteid-free filtrate was next thrown in a large volume of 95 per cent alcohol, and allowed to stand until the nucleic acid settled out. The major part of the alcohol could be removed by siphonage and the precipitate collected on paper. The precipitate was again dissolved in alkali in the presence of sodium acetate and acidulated with acetic acid. A slight precipitate was filtered off. To the filtrate saturated with sodium chloride was added hydrochloric acid until the mixture reacted acid to congo red when an equal volume of alcohol was added. This precipitate showed itself to be biuret free and was dehydrated with alcohol and ether. The products contained from 8 to 9 per cent phosphorus. As was the case with the nucleoproteids, the necessary amount of the substance was dissolved in an appropriate amount of 0.5 per cent sodium carbonate and injected within a few hours after preparation.

DETAIL OF EXPERIMENTS AND RESULTS.

In all instances the dogs received in a small branch of the femoral vein a uniform dose of 2 c.c. of serum per kilo of body weight. The injections were made under light ether anesthesia and the experiment terminated by bleeding from the femoral artery under light chloroform anesthesia. In each group animals were killed at intervals of four, eight and ten days. Five animals received dog's kidney nucleoproteid serum;* five, dog's pancreas nucleoproteid serum; four, cow's pancreas nucleoproteid serum; three, dog's kidney nucleic acid serum; and three, dog's pancreas nucleic acid serum.

Histology.—In no instance did postmortem examination reveal definite macroscopic lesions. The histological study was limited to the kidney, pancreas, and liver. Tissues were fixed in formalin and in Zenker's fluid; the former were examined for fat by the frozen section and Scharlach R method, the latter were embedded in celloidin and stained by hematoxylin and eosin. Fatty changes were not constant, and, when present, of but slight degree. In the kidney nucleoproteid series, fatty changes were found in the kidney series once (10th day) and in no other organ. In the dog's pancreas nucleoproteid series very slight fatty changes were found in three—in one, in liver, kidney and pancreas; in one, in liver and kidney; in the third, in kidney only. The cow's pan-

* In preparing the various sera, the average amount of dog's kidney nucleoproteid to each injection was 0.11 gram; of the dog's pancreas nucleoproteid, 0.13 gram; of the cow's pancreas nucleoproteid, 0.15 gram; of the dog's kidney nucleic acid, 0.25 gram; and of the dog's pancreas nucleic acid, 0.11 gram.

creas series gave negative results by this method. On the other hand, in the nucleic acid series fatty changes in the kidney were constant and well marked, affecting uniformly the loops of Henle. All the other organs were negative except for slight changes in the liver in one animal of the kidney nucleic acid series.

In the study of the Zenker hardened material, in no instance were changes in the pancreas found. The liver, although devoid of well-marked lesions, such as necrosis, almost constantly exhibited a peculiar change affecting all parts of the organ. This condition, which has been noted frequently by one of us as the result of the injection of various cytotoxins, and which unquestionably is that described by other investigators as a granular, vacuolar, or fatty degeneration is characterized by a swollen, pale, "washed-out" appearance of the liver cells with a few large, coarse granules and large irregular pale areas which stain but faintly or not at all. The latter areas are not of the character of fat vacuoles, but more irregular, vary considerably in size, and have no definite relation to the nucleus. The appearance is similar to that of liver cells containing glycogen, and as the same condition in marked degree was found in the adrenal, we are inclined to consider it as an abnormal accumulation of glycogen. Unfortunately this explanation did not occur to us until near the close of our experiments and proper routine tests were not made. Upon the basis of a single attempt to isolate the glycogen from the last dog of the kidney nucleic acid series, it can be stated, however, that a greatly increased amount of glycogen was present. This was determined by extracting the finely divided gland with hot water and filtering. The filtrate appeared milky white, gave the iodine reaction for the glycogen, which could be precipitated with alcohol at 65 per cent. No particular haste was employed in getting the organ into boiling water and the fact that the glycogen remained so long post-mortem points either to a large excess of the compound or perhaps to the absence or great diminution during life of the enzyme in the liver which transforms the glycogen.

The changes in the kidney were purely degenerative in character, of slight degree, and almost constantly present. The cells of the tubules, especially of the convoluted tubules, were swollen and very granular with more or less definite reticulum. As a rule the nucleus could be readily seen, but in the more marked conditions it stained poorly. Rarely the entire lining of a

tubule could be seen separated from its basement membrane and lying free in the lumen as a poorly straining granular ring. In addition to these changes the tubules of the cortex, and less frequently, the straight tubules contained the finely granular reticulum so commonly associated with the milder disturbances of the kidney. In the straight tubules this material was often so compressed as to suggest finely granular casts, but definite casts were found but twice and only in the kidney nucleoproteid series. In the collecting tubules and especially in the loops of Henle, in some instances, a more or less marked vacuolization was present corresponding to the fatty change determined by the use of Scharlach R. In no kidney were glomerular changes found.

It is difficult to distinguish sharply between the types of kidney lesions caused by the different sera. In general the changes due to nucleoproteid sera were more severe and widespread than those due to the nucleic acid sera. The latter were characterized by a greater degree of fatty change and by a tendency to involve the loops of Henle rather than the convoluted tubules. If the presence of casts be taken as a criterion the lesions due to the dog's kidney nucleoproteid must be judged the most severe. It is a matter of considerable importance that the cow pancreas serum, in no sense specific, caused lesions in the kidney not to be distinguished from those due to other sera.

Examination of the urine.—The animals, fed on dog biscuit, were kept in cages suitable for the collection of their urine. This was examined daily for proteids and reducing carbohydrates. The clear filtrated urine was heated to boiling and the merest trace of acetic acid added. This indicated in a roughly quantitative way the amount of coagulable proteids (albumin and globulin) present. It is almost a constant occurrence to find traces of such appearing at variable and irregular times in dog's urine. By traces we mean that upon the addition of acetic acid a faint turbidity appears, which is in no sense a precipitate, but which in the course of 24 hours settles out at the bottom of the tube as a small light fluffy cloud. A second portion was tested with potassium ferrocyanide and acetic acid. The clear urine acidulated with the acid was treated with one drop of the dilute reagent. It was the unusual occurrence to find this test absolutely negative in the dogs under examination in this series of experiments and this result has been confirmed in the examination of many of the

urines of other animals at different times. The urine of dogs, concentrated as it is in the passage of an excessively long system of tubules, carries down with it from the collecting tubules not inconsiderable quantities of proteids of the mucin and nuclealbumin type, which show themselves by the latter test. At times the result of this reaction amounted to a definite flocculent precipitate. With the possible exception of the urines of two of our dogs injected with kidney nucleoproteid anti-serum we feel assured that at no time did our tests give evidence of an excretion of proteid which could in any sense quantitatively or qualitatively be ascribed to changes in the kidney.

In the case of Dog 14 injected on May 20 the urine collected on the 24th showed with heat and with potassium ferrocyanide a decided flocculent precipitate which would be called a positive reaction. The same is true for Dog 15 injected on the same day, the urine reacting positively to both tests on the 25th. Other than these, no results were obtained which would compare in any way to that described by Beebe, where 53 per cent of the urinary nitrogen appeared in the form of albumin. The quantity of proteid in the cases cited was so small that no attempt was made to determine whether it was an albumin or globulin. At no time were casts obtained in the urine, but upon histological examination of the kidney of Dog 15 as in one other dog (17) of this series, a few hyaline casts were seen in the tubules.

In a paper read this year before the American Medical Association by Robertson and Hacker, and based upon work done in this Laboratory, attention was called to the frequent appearance in human urines tested by Fehling test solutions, of a yellowish-green coloration which varies in intensity from the merest opalescence to a definite, finely divided precipitate which in the course of some hours settles out slowly to the bottom of the tube. It was then stated that this reaction is the result of the addition of too much urine in performing the test and must undoubtedly be ascribed to the presence in the urine at times of some weakly reducing compounds capable in large quantities of partially reducing copper solutions. This pseudo-reaction never occurs when there is employed a small amount of urine, sufficient, however, to show dextrose if present. In testing the urine of dogs these remarks are extremely to the point. When 10 or more drops of the filtered dog's urine were added to the two or three times diluted and boiling Fehling's solution and the mixture

boiled a few seconds, it was not at all uncommon to notice in a few moments the appearance of a greenish-yellowish haze which gradually became more opalescent and opaque and which, in extreme cases, might resolve itself into a greenish or yellowish precipitate settling to the bottom of the tube, sometimes immediately, or, more frequently, if left standing, over night. This reduction is not due to dextrose; the urine showed no difference before or after fermentation, polariscopically; no osazone could be obtained, and Nylander's test resulted negatively. If on the other hand, only two or three drops of the urine were added to the diluted Fehling's solution in the ordinary way and not boiled after the addition of the urine the test remained negative. All of the urines tested for dextrose in the latter way, during the course of our experiments, showed absolutely negative results, while the pseudo-reaction was obtained more or less irregularly in 16 of the 20 dogs studied. In our opinion this pseudo-reaction has no direct bearing on the subject under discussion. In the case of one dog a continued pseudo-reaction was obtained which could be explained by the elimination of lactose following the removal of puppies during lactation. The negative results of Fehling's test with the urine of this animal indicated beautifully the fact contended for in the paper alluded to above, that Fehling's test performed as there advised can be employed without hesitation as a criterion for the presence of dextrose as against other reducing bodies. In none of the urines examined in these experiments was dextrose present in amounts which could be said to exceed the normal, granting that traces of reducing compounds, perhaps dextrose, do appear ordinarily.

While we cannot of course state positively, still it must be granted that it seems extremely likely that the reduction which Beebe describes as a "partial reduction of Fehling's solution" with "the formation of an abundant green precipitate" was nothing more or less than the pseudo-reduction which we have so frequently observed in the urines of normal dogs. As the manner in which his tests were performed or semi-quantitative details are not outlined, such explanations must be classed as only suggestive but not positive. It is our experience that the urines of the dogs injected with dog's pancreas nucleoproteid antiserum show no different character, as regards the content of reducing carbohydrates, than those treated with any of the other sera.

CONCLUSIONS.

In so far as conclusions from so small a number of experiments are justifiable, our results do not support the theory that specific cytotoxic sera may be developed by the injection of nucleoproteids but indicate, rather, that such sera have certain mildly toxic properties acting in a general way and affecting especially the principal excretory organ, the kidney. In this regard we are in accord with Marrassini and in a general way with Bierry and his associates, but in direct conflict with Beebe's very definite statements.

It is clearly evident, however, that Beebe's claims for a specific pancreas serum based on the demonstration of reducing substances in the urine, especially in the absence of histological changes in the pancreas, is untenable in view of our experience with like reducing substances more or less constantly present in the urine of normal dogs.

We can make no definite statement concerning nucleoprotein hepatotoxic serum, as we did not prepare such, but it is difficult to explain the focal necrotic lesions of the liver, caused by Beebe's hepatotoxin, as a result of the action of a substance which should, presumably, affect the liver cells more diffusely. It may or may not be a matter of importance that his nucleoproteids were prepared from organs but roughly washed in running water and therefore, especially as regards the liver, containing large amounts of blood. That a very toxic nucleoprotein may be obtained from red blood cells is well known and it is possible that, as a result, Beebe's serum may have contained hemolysin and agglutinin due to this substance, in addition to the supposed hepatotoxin, in sufficient amount to cause focal liver necroses through agglutinative thrombi, as has previously been described by one of us.⁸

Beebe states that all his sera "are markedly hemagglutinative and hemolytic *in vitro* in dilution up to one to five, but in dilution of one to twenty or above no difference is to be detected between the immune and the normal serum." The hemolytic and hemagglutinative powers of our nucleoprotein sera (the nucleic acid sera were not tested) were much weaker. Thus the dog's pancreas nucleoprotein serum, for example, had very slight power to hemolyze or agglutinate red cells. Two parts of the pure serum to one of dog's blood caused neither hemolysis

nor agglutination, while 10 parts were required to cause but a faint hemolysis; with the same amount a very definite fine agglutination was evident only after five minutes. It would appear, therefore, by comparison, that the use of blood-free organs in the preparation of nucleoproteid sera lead to the production of a serum less hemotoxic than those developed by the use of unwashed organs. Under such circumstances, therefore, it is very important that future investigators of nucleoproteid sera work with blood-free tissues.

The changes in the kidney resulting from the administration of the kidney nucleoproteid serum, while very definite, cannot be considered as specific or even "special," for similar changes, often of the same grade, characterized the action of all other sera, even that prepared from cow's pancreas. These changes are, therefore, to be regarded as the effect of the excretion of toxic substances rather than as the manifestation of a selective action of the serum. It must be admitted, however, that it is difficult so to explain the severe albuminuria described by Beebe.

Finally, attention must once more be called to the importance, in all investigations of cytotoxic sera, of the use of blood-free organs, to the occasional occurrence of copper-reducing compounds in the urine of apparently normal dogs, to the not infrequent spontaneous nephritis in these animals, and to the possibility of albuminuria due to a catheter cystitis.

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THE CHEMISTRY OF ATHEROMA AND CALCIFICATION (AORTA).*

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This investigation owes its inception to an attempt to study by micro-chemical methods the sequence of the changes occurring in the experimental lesions produced in the rabbit's aorta by the administration of adrenalin. As however micro-chemical methods proved unsatisfactory and analytical methods impossible, on account of the small amount of substance in the rabbit's aorta, the work, as originally planned, was abandoned in favor of a study by analytical methods of the chemistry of the various stages of arteriosclerosis in the aorta of man. The studies of Klotz,¹ which appeared shortly after the beginning of the work, and those of Wells,² which were published previous to its conclusion, are so recent that they render a general survey of the literature of calcification unnecessary.

As this work has to do mainly with the relation of the fatty acids and lecithin³ (phosphorus) to calcification, the results of Klotz and Wells have a very important relation and the views of these investigators may be briefly stated at this time. Klotz employing chiefly micro-chemical methods, believes he has demonstrated that the fatty acids play an important part in calcification. In a few qualitative examinations of calcified material he found what appeared to be calcium soaps. These observations he attempts to support by micro-chemical studies which, however, are not convincing. His demonstration of soaps depends on a peculiar staining with Sudan III, of calcium—principally upon a black discoloration with an aqueous solution of silver nitrate (Kossa's stain). The occurrence in close contact of granules staining by each of these methods is taken as evidence

* Conducted under a grant from the Rockefeller Institute for Medical Research. Published also in *Jour. Med. Research*, 1906, xv.

¹Klotz, O., Studies upon Calcareous Degeneration, I. The Process of Pathological Calcification, *Jour. Exper. Med.*, 1905, VII, 633.

²Wells, H. G., Pathological Calcification, *Jour. Med. Research*, 1906, xiv, 491.

³The term is meant to include all kinds of lecithins or lecithans.

of the presence of calcium soaps and the conclusion is drawn that the formation of these soaps is the first step in the process of calcification. The inaccuracy of this method of investigation has been pointed out by Wells, who, using purely analytical methods, reaches a different conclusion. He finds there is no essential difference between the processes of normal ossification and pathological calcification. No evidence was obtained to indicate that calcium soaps form a constant and important stage in the process of calcification. That they may be present in small amounts is not denied. His experimental studies also speak strongly against phosphoric acid, arising from decomposed nucleoproteids, as an important binder of calcium.

Material.—The investigations here to be described deal with the study of nine aortas. Of these three were normal, two were aortas with extensive atheroma but no macroscopic evidence of calcification, and four showed various grades of calcification. One of these latter was the seat also of large “atheromatous ulcers.” As several of the points studied have been covered by Wells’ recent publication, these results will be stated but briefly.

Methods.—The preparation of the material was as follows: The entire aorta from heart to division of the iliacs was removed and the intima and media carefully separated from the adventitia in order to exclude all extraneous fat. The material was now cut into small pieces, dried in absolute alcohol over a water bath, ground to a powder, and then placed in a flask with reflex condenser and boiled with absolute alcohol for periods varying from twenty-two to fifty-four hours and afterwards extracted in the Soxhlet apparatus for from nine to thirty-one hours. To facilitate extraction, the material was reground every twelve to fifteen hours and fresh alcohol added. The powdered residue was now extracted in boiling chloroform from twenty-two to thirty-four hours and in the Soxhlet apparatus seven to fourteen hours. The use of ethyl ether, which was one of the solvents first employed had to be discontinued on account of the fact that numerous specimens reacted acid to phenolphthalein. Since this indicator served in the determination of the fatty acids, a neutral solvent became extremely essential. The extractive material taken up in absolute alcohol, boiling absolute alcohol and chloroform was in each case entirely soluble in these solvents. An analysis of the extract was then made for calcium soaps, fatty acids and

lecithin as follows: To be absolutely certain of the solubility of calcium soaps, calcium stearate was prepared artificially. It was found to be sparingly soluble in cold absolute ethyl alcohol, considerably soluble in hot absolute ethyl alcohol, but insoluble in chloroform. According to Wells, "calcium oleate is less soluble in ether than in alcohol and the palmitate and stearate dissolve very little in ether, although considerably in ethyl alcohol; all dissolve much better in amyl alcohol, probably largely because of its high boiling point." According to the method of extraction, the calcium soaps should become soluble in the absolute alcohol and appear in the extractive material. The extracts were tested for Ca by fusing with sodium hydrate and potassium nitrate, precipitating with ammonium oxalate and weighing as CaO. The fatty acids were titrated in alcoholic solution with alcoholic $\frac{N}{10}$ NaOH using phenolphthalein as indicator.

Since the phosphorus contained in the alcohol-chloroform extracts was wholly organic in character, it could be considered that the P-content depended upon the presence of some form of lecithin.¹ The P_2O_5 content of the extracts was therefore determined by fusion, precipitation with molybdate solution, magnesium mixture and weighing as pyrophosphate and then calculated as distearyl lecithin. The remainder of the extractive material was estimated as neutral fats. The residue, remaining after extraction, was examined for Ca, Mg and P_2O_5 by the ordinary analytical methods. In making comparisons with other work, however, we must emphasize the fact that the residue of the entire aorta was used and not merely isolated calcified areas.

I wish here to express my indebtedness to Dr. Holmes C. Jackson, Director of the Laboratories of Physiological Chemistry and Experimental Physiology of the Albany Medical College, without whose instruction and supervision this investigation would have been impossible.

Results—I. Calcium soaps. As far as we were able to determine, no calcium soaps, or only mere traces, were to be found in normal or pathological aortas. This was definitely shown in the following manner. Extracts of the aortas which were completely soluble in absolute alcohol gave no reaction for calcium. Extracts, with supposed calcium content, dissolved in chloroform without leaving a trace of residue. As mentioned before the soap, calcium stearate, is insoluble in chloroform.

¹DUNHAM, E. K., *Proceedings of the Soc. for Exp. Biol. and Med.*, 1904, I, 30.

II. *Fatty acids and Lecithin.* These will be considered together.

NORMAL AORTAS.

	DRIED SUBSTANCE—PER CENT.		FATTY EXTRACTIVE—PER CENT.		
	CaO.	Fatty Extractive.	Fatty Acid.	Lecithin.	Neutral Fat.
1.....	1.4	20.3	6.1	18.3	75.6
2.....	.3	11.9	5.73	16.3	77.97
3.....			6.18	15.9	77.92

The surprisingly large percentage of lecithin is directly in line with the results obtained by Dunham* in his study of the normal kidney. He found that twenty-seven to thirty-seven per cent of the fatty extract was present in the form of lecithin.

Considering now the degree of calcification in the diseased aorta (the difference in calcification can be determined definitely by difference in calcium content of the residue) a striking relationship of the fatty acids, and especially of lecithin, to the grade of calcification is noticed. This is shown in the following table in which the analyses are arranged according to the calcium content; the last two being those in which no calcification was evident macroscopically.

DISEASED AORTAS.

	DRIED SUBSTANCE—PER CENT.		FATTY EXTRACTIVE—PER CENT.		
	CaO.	Fatty Extractive.	Fatty Acid.	Lecithin.	Neutral Fat.
1.....	11.9	22.5	9.6	16.6	73.8
2.....	7.5	30.	13.9	19.06	67.04
3.....	7.2	22.4	19.9	24.2	56.7
4.....	3.8	28.3	21.9	20.9	57.2
5.....	1.7	8.1	20.2	37.9	41.9
6.....	1.4	9.4	25.1	52.2	22.7

It is seen that the fatty acids and lecithin are present in greatest amount in the atheromatous aortas without gross evidence of calcification and that as the calcium content increases they rapidly diminish in amount. The remarkable increase in the amount of lecithin and fatty acids which appears at the initial stage of calcification certainly lends evidence to the fact of a decided "fatty" transformation occurring at this time. The fatty acids and lecithins here may or may not have a common origin. The parallelism in their appearance points to the probability that they

* Loc. cit p. 40.

do. The fact that lecithin and fatty acids may arise from a decomposition of substances of the "protagon" type which Dunham has shown to exist in surprisingly large amounts in the normal cell further substantiates this idea. The second stage in the fatty transformation consists in the disappearance of the lecithin and fatty acids coincident with the increasing calcium content of the tissue. The fatty acids probably react with the alkalies furnished by the blood and pass out of the cell as soluble compounds. The lecithin undergoes decomposition, liberating its phosphate radical which serves either in part or entirely as the conjugant of the calcium.

III—*Neutral Fats*. The remainder of the fatty extractive was calculated as neutral fats. The results are shown in the above table. This procedure is not absolutely correct, since necessarily numerous lipoids were present; for example, beautiful tests for cholesterin were obtained.

IV—*The Residue*. Unfortunately, it was impossible to examine only calcified areas for calcium, phosphates and magnesium and at the same time to use all the material for fat analysis. Instead, the residue of the entire aorta was used. The entire P_2O_5 estimated was considered as combining with MgO and CaO to form $Mg_3(PO_4)_2$ and $Ca_3(PO_4)_2$. The remaining CaO was estimated as $CaCO_3$. In the aortas of lower calcium content, there was relatively a small quantity of $Ca_3(PO_4)_2$ while as calcification proceeded, the proportion of calcium phosphate to carbonate increased. For instance, in an aorta with estimated 3.8 per cent Ca content, the relationship between the $Ca_3(PO_4)_2$ and $CaCO_3$, was as 69.5 to 25; that with 7.5 per cent Ca content as 74.7 to 24.8; and that with 11.9 per cent Ca content, as 79.9 to 19.9.

As the calcification proceeded, however, the magnesium content decreased, being present in the more calcified areas as 0.1 per cent and 0.32 per cent.

Comparisons. Comparing our results with those of Klotz and of Wells:

1. They differ from those of Klotz, in that by analytical methods we were unable to find the calcium soaps which he claims to have demonstrated by micro-chemical examination but are in accord with Wells' results in this regard.

2. The inorganic analysis of the residue differs, however, from that of Wells. Possibly this is due to the fact that the entire aorta was used. Such material necessarily included both calci-

fied and normal areas, thus diminishing the absolute percentage of calcification. Again Wells examined a different kind of tissue (lymph node) and it is not impossible that the somewhat higher P_2O_5 content obtained by him is due to the presence of the phosphorus containing proteids or their decomposition products which are known to be present in such tissue in relatively large amounts. The $Ca_3 (PO_4)_2$ percentage was lower and the percentage of $Mg_3 (PO_4)_2$ much less. The figures do not show the very close relationship to normal ossification which is so evident in his results.

CONCLUSIONS.

1. The absence of calcium soaps in the extracts of all aortas examined leads us to the conclusion that in pathological calcification, of the aorta at least, the formation of calcium soap is not an intermediate process.

2. The analyses of the residues apparently point to the fact, insisted upon by Wells, that in pathological calcification, the inorganic salts are deposited in approximately the same proportion as in normal ossification. This does not necessarily signify, however, that the initial processes, from which pathological calcification and normal ossification result, are identical.

3. The remarkably high percentage of lecithin in the initial stage of calcification and the fact that with increasing calcium content there occurs a coincident diminution in the percentage of lecithin has led us to suspect that the phosphate radical may be supplied from a decomposition of lecithin.

ACTION OF CERTAIN DRUGS ON THE ELIMINATION OF URIC ACID DURING A NITROGEN- FREE DIET.*

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The extreme divergence of opinion which exists, based chiefly on a contradiction of experimental results, in regard to the metabolic disturbances commonly associated with the deposition of urates in specific localities of the body has frequently been the stimulus for further work along lines tending to the possible elucidation of this problem. It seemed probable to us that a fruitful line of inquiry lay in the attempt to determine what changes would appear in the nitrogenous composition of the urine of persons nourished with nitrogen-free food during the period of administration of such drugs (colchicum, sodium salicylate) as are most valued in the general treatment of gout or more especially of its seizures.

The fact that alcohol in its various forms apparently is a factor in causing disturbances in the normal elimination of the nitrogenous constituents of the urine and its well-known relation to the appearance of gouty tendencies influenced us to re-examine its effects with the view of comparison and possible confirmation of the work already carried out in this direction. In regard to the literature which has developed on these subjects within the past ten years it may be stated that many, if not all, of the experiments conducted before the time of our knowledge concerning the importance of the distinction between "endogenous" and "exogenous" eliminations, involving, as this does, the important question of diet, must be ruled out as useless. Experimentation is constantly hemmed in by faulty or inexact methods. Unfortunately each advance in the direction toward accuracy

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sets the seal of questionable usefulness on older pieces of experimentation.

In the discussion we will here confine ourselves to the possible explanations of the results which have been obtained by others and those which we reached as the effect of the giving of alcohol, colchicum and sodium salicylate at a time when the nitrogenous elimination was, so to speak, of almost maximum endogenous origin, i. e., during the period of non-nitrogen diet.¹

Our experiments were carried out on the writers and Dr. J. F. Robinson, assistant in surgical pathology in the Bender Laboratory, who kindly volunteered to aid us and to whom we wish to express our grateful indebtedness.

DIETS.

During the preliminary purin-free period, the diet consisted of eggs, milk, potatoes and bread, the quantities being only approximated in the case of the three subjects and during the three days of the period. The results, however, were sufficiently in accord to serve as a satisfactory control for the subsequent nitrogen-free period. When the question arises as to the character of a diet which shall be nitrogen-free, we are confronted by the well-nigh impossibility of obtaining one, which shall serve as a palatable and savory substitute for the ordinary mixed diet while containing sufficient calorific value. For many persons the occurrence of nausea under such a diet precludes the possibility of its employment by them. Whether or not this is a psychic phenomenon is still somewhat questionable. The two principal objects to be attained in any such diet are that it be palatable and that by its absence an appetite be aroused, for, in the light of recent work, we can not but appreciate the extreme importance which must be attached to the psychic factors of digestion. These conditions unfortunately are hard to obtain. The usual ingredients of this diet are some form of pure starch, pure saccharose or other sugar and fat in the form of butter or thick cream. This combination has been employed by many investigators and especially by Pfeil,² Landergren³ and by Folin⁴. The latter, referring to ar-

¹We are of course well aware that to prepare a diet containing absolutely no nitrogen is well-nigh impossible. The term is constantly employed, however, as significant of the relatively low nitrogen content of the constituents when compared to the ordinary or even the meat-free diet.

²*Ztschr. f. physiol. Chem.*, xl, p. 1.

³*Skand. Arch. f. Physiol.*, xiv, p. 112.

⁴*Am. Jour. Physiol.*, xiii, p. 66.

rowroot starch, which is commonly employed, gives it as his opinion that it is free from nitrogen and more palatable than corn or potato starch. The former statement is not strictly true, since nitrogen in small amounts can be detected in most samples of this type of starch. Relative to the degree of palatability of the starches as prepared by semidigestion with diastase (Folin) it can only be stated that it is a choice between evils of somewhat equal intensity. In any case, flavoring of some kind must be added to render it savory, after which it makes little difference what kind of starch has been employed. Without further discussion as to the diet suffice to say that, after personal experience, we decided that for our taste the daily diet most adapted to prolonged general use was the following:

Grams.	Calorific value.
250 arrowroot	957.0
140 pure cane sugar	504.4
50 butter	450.0
100 fat in the form of 250 c.c. of 40 per cent. cream	900.0
Sodium chlorid to taste.	2811.4

The whole daily allotment was prepared at one time, but was eaten in approximately three equal parts at the three meal hours during the day. The preparation took place as follows: The arrowroot was thoroughly stirred into 400 c.c. water in which the cane sugar and salt (about 20 gm.) had been previously dissolved. This was poured into a boiling mixture of equal parts of the cream and water and the whole well beaten under constant boiling for 20 minutes. At this point the mixture assumed the character of a blanc mange. The pudding was then flavored with various kinds of extracts and fruits. The presence of small quantities of nitrogen in the berries and fruits thus employed may account for the slight variations in the amount of nitrogen eliminated from day to day; the fluctuations, however, are not sufficient to affect whatever changes may have been noted.

From the thermodynamic standpoint the diet was ample. This fact is particularly evidenced by the rapidity with which the nitrogen elimination diminished during the starch-cream diet. On two of the subjects on the third day, and in the third on the fourth day, there was less than 3 gm. of nitrogen excreted during the 24 hours. These figures approach those of Siven⁷ and of Landergren.

⁷Skand, *Arch. f. Physiol.*, xi, p. 308.

METHODS.

The total nitrogen was estimated by the Kieldahl-Gunning method. The urea was determined by the Mörner-Sjoquist method, with the exception that in the sodium salicylate experiment a total nitrogen determination was made on the ether-alcohol filtrate (after the removal of the ether and alcohol) and from this quantity was subtracted that determined for the ammonia by separate analysis. Ammonia was estimated by the Shaffer method; uric acid according to the Hopkins-Folin method; creatinin by Folin's adaptation of calorimetric readings to Weyl's test. The calorimeter employed was made to order for us by Mr. E. C. Fasoldt, expert mechanician of Albany, N. Y., after designs with modifications according to the sketch by Van Hoogenhuyze and Verploegh.¹ This instrument reads to 0.001 inch (0.0254 mm.). Duplicate readings could easily be made to within 0.126 mm., which corresponds to .015 G. creatinin, according to Folin's calculation, giving results easily within the limits of error.

The inorganic phosphorus pentoxid was determined by titration with uranium nitrate, using potassium ferrocyanid as indicator. The organic phosphorus pentoxid estimation took place as follows: 100 c.c. of urine was evaporated to dryness, fused with sodium hydrate and potassium nitrate and on the fused mass the phosphorus pentoxid determination was made by the ordinary gravimetric method. The difference between this and the inorganic phosphorus pentoxid determination gave the organic phosphorus pentoxid. Total acidity was estimated by titration with sodium hydroxid, employing phenolphthalein with potassium oxalate, as suggested by Folin. Tables 1, 2 and 3 give the figures obtained in the analysis of the purin-free and nitrogen-free periods.

Before we take up the discussion of the main problem it may not be out of place to emphasize some few points which are brought out by the results of the starch-cream diet and also by a comparison of the latter with the purin-free period. In general the figures for creatinin may be considered as confirmatory to a certain degree of Folin's contention that in meat-free diets the elimination of this substance is independent of the amount of nitrogen excreted. No great variations occur in our figures, but they do, however, plainly indicate that the character of the diet

¹*Ztschr. f. physiol. Chemie*, xlvii, p. 419.

TABLE 1.—H. C. J.

Date.	Volume in c.c.	Sp. gr. 1.0—	Total Nitrogen, gm.	Per cent of Total Nitrogen as					P ₂ O ₅ .		Acidity in c.c. — N Total.	Remarks.
				Grams Nitrogen eliminated as					Inorganic, gms.	Organic, gms.		
				Urea.	Ammonia.	Uric Acid.	Creatinin.	Undeter- mined.				
9	950	28	8.7	87.3	4.5	1.5	5.4	1.3	1.80	.....	.....	Purin-free diet.
10	815	25	9	7.61	.398	.130	.443	.12	2.17	.....	.....	Purin-free diet.
11	805	26	10.0	86.5	3.1	1.4	4.7	.15	2.14	.....	.....	Purin-free diet.
17	430	25	4.8	80.9	3.9	1.2	4.6	.04	0.93	.077	379.5	Starch-cream diet.
18	810	15	3.7	8.99	6.8	2.8	10.6	4.6	0.00	.050	216.0	Starch-cream diet.
19	650	15	2.8	75.2	3.61	.328	.514	.21	0.90	.020	186.0	Starch-cream diet.
20	860	15	2.6	70.0	10.3	2.5	12.5	4.7	0.87	.077	171.0	Starch-cream diet + alcohol.
21	1115	15	2.4	58.5	13.7	2.0	15.7	10.1	0.82	.099	145.5	Starch-cream diet + alcohol.
				1.64	3.83	.055	.449	.27				
				60.3	11.6	3.0	16.9	7.3				
				1.00	.308	.102	.449	.10				
				58.3	14.0	3.0	10.1	5.6				
				1.43	.343	.073	.468	.14				

TABLE 2.—K. D. B.

9	1215	26	9.63	86.6	5.3	1.8	5.4a	0.9	1.84	.....	Purin-free diet.
				8.34	.512	.175	.526	0.9		.....	Purin-free diet.
10	1200	24	9.24	87.1	5.3	1.4	5.6	0.6	2.46	.....	Purin-free diet.
				8.05	.486	.128	.522	.6		.....	Purin-free diet.
11	1295	14	8.94	80.1	4.7	1.7	6.1	1.4	2.08	.....	Starch-cream diet.
				7.70	.417	.149	.551	.12	.84	.....	Starch-cream diet.
17	1785	12	4.43	72.4	11.6	0.52	10.2	5.3	1.00	.....	Starch-cream diet.
				3.21	.515	.023	.454	.23	154.8	.....	Starch-cream diet.
18	1710	12	3.42	69.1	12.0	0.35	14.5	4.0	1.10	.....	Starch-cream diet.
				2.36	.411	.012	.497	.14	184.6	.....	Starch-cream diet + alcohol.
19	1700	12	3.48	61.2	15.7	0.39	14.0	8.7	1.11	.....	Starch-cream diet + alcohol.
				2.01	.516	.013	.461	.28	88.4	.....	Starch-cream diet + alcohol.
20	2550	05	2.97	62.0	12.0	0.54	16.6	7.0	.73	.....	Starch-cream diet + alcohol.
				1.87	.383	.016	.494	.23		.....
21	2570	05	3.08	66.2	11.4	1.00	16.1	5.3		.....
				2.04	.351	.031	.497	.16		.....

TABLE 3.—J. F. R.

9	550	32	9.06	86.2	4.6	1.7	5.1	2.3	1.83	.....	Purin-free diet.
				7.81	.420	.157	.463	.21		.....	Purin-free diet.
10	790	28	11.14	89.5	3.5	1.2	4.4	1.4	2.25	.....	Purin-free diet.
				8.58	.392	.139	.408	.13		.....	Purin-free diet.
11	900	28	9.08	88.8	3.6	1.8	4.8	1.0	2.76	.....	Starch-cream diet.
				8.07	.330	.162	.436	.08	423.0	.....	Starch-cream diet.
17	400	28	6.16	79.0	5.5	1.8	9.3	4.3	1.03	.....	Starch-cream diet.
				4.87	.341	.114	.576	.26	273.0	.....	Starch-cream diet.
18	980	24	4.17	70.9	8.1	2.3	11.2	7.5	1.00	.....	Starch-cream diet.
				2.96	.338	.099	.469	.30	.098	.....	Starch-cream diet + alcohol.
19	850	13	2.72	55.0	13.5	3.3	18.2	9.1	.82	.....	Starch-cream diet + alcohol.
				1.52	.369	.090	.496	.26	.410	.....	Starch-cream diet + alcohol.
20	825	14	2.52	55.0	12.0	5.0	19.5	6.7	.055	.....	Starch-cream diet + alcohol.
				1.41	.327	.128	.491	.17		.....
21	720	15	2.21	54.3	14.9	5.4	22.4	3.0		.....
				1.20	.329	.120	.496	.08		.....

does exert in some manner a distinct though variable influence on the quantity of creatinin eliminated; further variations in creatinin elimination were also noticed, but these will be discussed later. Averages for the purin-free diet periods in the case of each of the three persons (A, B and C) are: Creatinin, A, 1.23 gm.; B, 1.43 gm.; C, 1.25 gm.; for the starch cream periods, of which there are two each for A and C: A, 1.13 gm. and 1.28 gm.; B, 1.26 gm.; C, 1.38 gm. and 1.33 gm. Considered as a whole, these figures might be regarded as lying within the limits of error. When the results for the individual days are examined it will be seen that only in two instances do the values in one series come within the limits of its comparative series, thus indicating differences which lie outside of the factor of their variability. This condition would tend to throw doubt on the statement made by the same author that the elimination value is constant for each individual, but different for different persons. This we could not confirm. Undoubtedly the explanation for this does not lie primarily in the character of the diet, but in the general condition of the cells of the body (endogenous metabolism) influenced secondarily by the diet, but not dependent directly on its nitrogen. In this sense Folin's ideas perhaps would find confirmation.

The effect of the nitrogen-free diet with its high calorific value is admirably shown when we consider the elimination of urea and ammonia, both in absolute quantities and in their relation to the total nitrogen output. In the purin-free period the percentage of the total nitrogen eliminated as urea varied from 86.2 to 89.9 in the three persons; the ammonia, from 3.1 to 5.3, figures which may be considered to be well within normal limits. The average for the control nitrogen-free period does not indicate as accurate a picture of the change inaugurated by the diet as would an inspection of the individual figures. However, the urea-nitrogen percentage of the total diminished to 55.9 and 79.0 per cent (last day of periods 55.9, 61.2 per cent) and the ammonia increased to 5.5, 15.7 per cent (last day, 13.5, 15.7 per cent). These figures are in complete confirmation of Folin's⁴ results. In fact, they apparently answer the question propounded by this author as to the possibility of still further reducing the percentage of urea-nitrogen below the level of 60 per cent found by him. A glance at the figures in the tables will suffice to enable one to answer this interrogation positively. The constancy of the ammonia elimina-

tion both in the purin-free and nitrogen-free periods is worthy, perhaps, of some attention.¹ This fact would indicate that under normal conditions a portion of the ammonia output does not stand in any direct proportion to the excretion of urea (endogenous elimination). Superimposed on this constant amount is that eliminated as the result of secondary influences such as diminution in the urea-forming function or acidosis. The effect exerted on the uric acid by the change from purin-free to nitrogen-free diet is equally interesting. The experiments of Burian and Schur² and, independently, of Siven and of Pfeil would tend to indicate that the uric acid elimination is independent of the total nitrogen output in purin-free diets. Folin's results stand at variation with this statement, and this author enters into a well-directed discussion as to the probable cause of this discrepancy. He concludes that not all of the uric acid eliminated during the so-called purin-free diet can be considered endogenous. We feel that our results show ample substantiation for this contention. There is a distinct and marked diminution in the absolute quantity of uric acid output during the nitrogen-free diet as compared with the purin-free period. In fact, in two of the three individuals the decrease was out of all proportion to the decrease in the nitrogen elimination, and hence there resulted an actual percentage diminution. The third case reacted similarly to those of Folin, in which there resulted an absolute decrease, but an increase in proportion to total nitrogen. Extremely interesting in connection with a possible explanation of these differences is the fact brought out by Folin that in a one-day change of diet from arrowroot to potatoes the individuals excreted more uric acid than on previous or subsequent days. As Burian and Schur's purin-free diet included potatoes, he suggests that perhaps the so-called purin-free articles of diet are not such in the sense of not causing the formation of purins. An examination of Folin's figures, however, indicates that not only is the uric acid, but also the creatinin and urea increased, and, more important still, the absolute quantity of ammonia markedly diminished so that the percentage output assumes almost that of the normal. If the potato diet merely affected the uric acid and indirectly the total nitrogen output the above explanation might be correct. In the light of the increase in urea

¹Schittenhelm, C. F., and Katzenstein: *Ztschr. f. exp. Path. u. Therap.*, ii, p. 542.

²*Arch. f. die Gesamte physiol.*, lxxxvii, p. 230.

and creatinin¹ and decrease in ammonia observed, it would seem as if a more probable explanation would be that the nitrogen content of the potato had simply caused the metabolism to return to the level of a higher nitrogen elimination which is under these conditions always accompanied by lowered percentage ammonia excretion. The basic content of the potato could not suffice to cause this change in the ammonia elimination. We will have occasion to return to this point when the effect of the drugs on the elimination of ammonia and uric acid is discussed. The inorganic phosphates suffered a decrease, while the undetermined nitrogen both increased in absolute quantity and in per cent of total nitrogen.

We have entered into this somewhat prolonged discussion of our control results mainly that there might be presented clearly the differences which appeared between the purin-free and nitrogen-free diets, placing special emphasis on the uric acid elimination in order that a basis should be established on which changes due to the drugs must be reckoned. Incidentally there has entered the necessity of confirming Folin's results. These we feel have been amplified while the several points become more distinctly drawn by the increased calorific value of the diet.

ACTION OF DRUGS.

A nitrogen-free diet, during which the nitrogen metabolism may be said to be strictly endogenous in character and reduced to its lowest minimum, appeared to us to present the best possible condition for the study of changes induced by the administration of certain agents about the effects of which on the elimination there are differences of opinion. It was hoped to obtain under such circumstances data which might be of service in throwing some light on the factors directly or indirectly implicated in the deranged metabolism.

ALCOHOL.

In view of the etiologic relationship which is thought to exist between alcohol in its various forms and arthritis uratica, it was thought essential to study the effect exerted by this substance on the relationships of the nitrogenous constituents of the urine excreted during the time of a nitrogen-free diet. Within the limits of this paper we can not discuss even in a meager manner the

¹In both of the cases indicated the creatinin elimination on the potato days reached the level of the milk-egg diet.

mass of literature, discordant in greatest part, concerning the chemistry of perverted metabolism in gout. It must suffice to confine ourselves to the effect produced by alcohol primarily on uric acid and secondarily on urea, ammonia, creatinin, the inorganic phosphates and the organic phosphorus elimination in the hope of eliciting facts that may throw light on the changes which occur.

The results obtained by various investigators in this direction are somewhat discordant and incomplete. The earlier work of Herter and Smith must be disregarded on account of the lack of knowledge at that time of the importance of regulating the diet. Again, all experiments concerning uric acid formation which are carried out on dogs can serve merely as confirmatory evidence, since we are aware of the distinct difference in nuclein metabolism which exists between dogs and man.

Later, the first well-devised experiments were those of Rosemann on a young man unaccustomed to the use of alcohol. His results do not find easy explanation. Suffice to say that 0.78 gm. of uric acid was excreted *per diem* during the 10-day alcohol period, as against 0.82 gm. during the control period. The 1,500 c.c. of 5 per cent alcohol added to the diet evidently not only did not increase the uric acid elimination, but tended to diminish it.

Beebe's carefully conducted experiments next appeared. In most of his experiments the examination of the urine was made hourly; alcohol pure and in its various forms was ingested both with and without food. The diets were rigorously observed, some of them containing purins and some purin-free. His deductions, which have a direct bearing on our topic, are as follows: In one experiment when alcohol (250 c.c. of 20 per cent.) was taken at one dose without food the hourly excretion of uric acid showed no change. A close examination of his figures might justify other conclusions, however. During the course of the experiment the hourly quantity of uric acid diminished from 30 mg. to 20 mg. and for three hours after the ingestion of the alcohol the subject was in a state of narcosis. Although the first hour after alcohol showed a decided decrease (from 31 to 26 mg.) in uric acid excretion, the following three hours averaged more than this (28 mg.). In view of the fact that a decided diminution was taking place in the uric acid output during the day, these figures might well be taken to indicate at least a tem-

porary stoppage of that decline if not a positive increase. This experiment is not convincing. At the same time it must be admitted that Eschenburg¹ came to similar results, although his experiments were not so carefully carried out. On the other hand, Beebe found that both with purin-containing food and with a purin-free diet alcohol increased the elimination of uric acid, but that the increase was the greatest the larger the purin content of the food. In this Eschenburg also agrees. The increase, examined hourly, reached its maximum from 4 to 5 hours after the meal. Since the maximum increase as the result of the ingestion of food also occurs at that time, Beebe considers that additional proof is supplied for his conclusion, from the above experiments, that the increased uric acid excretion after alcohol is due to a disturbed metabolism of the purin constituents of the food.

While we have no results which are exactly comparable to his, the fact that on a nitrogen-free diet there took place a decided increase in the elimination of uric acid during alcohol ingestion must throw some doubt on the theory which Beebe advanced. In the following experiments the diet remained unchanged, but on the first day 300 c.c. of 25 per cent alcohol was taken in 7 doses at two-hour intervals during the day. No effect was noticeable, except that when the administration occurred at the time when the stomach was empty the usual sensation of warmth was felt; on the second day 200 c.c. of cognac containing about 50 per cent alcohol was ingested in 8 aliquot parts at two-hour intervals. This was without narcotic effect of any kind, and the subjects kept about their usual work in the laboratory (Tables 1, 2 and 3). From the figures of the tables, the following effects of alcohol may be readily noticed. Their general discussion appears later. A distinct diuretic effect, most marked in subject B, less so with J, and not noticeable in subject R (unaccustomed to alcohol) occurs. No proteid sparing action can be observed. A definite rise in uric acid excretion takes place (25 to 50 per cent). The elimination of ammonia undergoes a decrease. The creatinin output stands unchanged. There is marked increase in the organic phosphorus.

In our experiments the increased uric acid elimination might either be due first to an increased oxidation of purins of endogenous origin or, second, to an increased formation (synthesis) of uric acid, or perhaps, third, to a diminished oxidation of the uric acid.

¹ *Münch. med. Wochschr.*, xlvii, p. 2263.

According to the first supposition, the quantity of purin bases eliminated should undergo a diminution in the proportion as they suffered an increased oxidation to uric acid. Unfortunately our determinations of the purin bases during these experiments were not sufficiently satisfactory or complete to warrant their presentation at this time. It can only be stated that no diminution apparently occurred; but we expect to verify this in a later publication. Beebe found an increased output of purin bases coincident with the augmented excretion of uric acid.

In the second supposition, if an increased synthesis occurred, changes should also have taken place in the other nitrogenous constituents or their antecedents which furnished the nitrogen for the synthesis. This did actually appear in that the ammonia elimination both absolutely and in its percentage of the total nitrogen diminished. Here again, our results are in direct opposition to those of Beebe, in which there was a decided increase in the ammonia output. While our periods were not as prolonged as his, still our figures are less variable, and the decrease in the three cases is, respectively, 6, 12 and 29 per cent. To correlate this fact with the increase in uric acid is somewhat difficult; perhaps they represent two distinct processes in no relation to each other. It is well known that the ammonia elimination stands in close relationship to the formation of acids in the organism, its function in part being that of a neutralization agent. Based on this idea, the diminished ammonia elimination would point to a diminished formation of acids from decreased decomposition of proteid or fats in the organism. In this case the diminished ammonia output would stand in no direct relation to the augmented uric-acid output. One noticeable effect due to the alcohol is the undoubted increase in the organic phosphorus elimination which occurred not only with alcohol, but after other agents (colchicum and sodium salicylate), which also increase the uric-acid output. Various attempts have been made to show that increased uric acid or purin elimination was followed by an augmentation in the quantity of inorganic phosphates excreted. This having proven impossible, attention has been turned to the organic phosphorus of the urine.¹ It would seem most plausible that in the formation of purin bodies, especially uric acid, from the nucleoproteid of the cell the phosphoric acid of the nucleic acid component

¹Oertel: *Ztschr. f. physiol. Chem.*, xxvi, p. 123; also Mandel and Oertel: *N. Y. Univ. Bull. Med. Sci.*, i, p. 165; Symmers: *Jour. of Path. and Bac.*, x, p. 159.

should be eliminated, if not as an inorganic phosphate, perhaps in "organic" form, i. e., as nucleotin phosphoric acid,¹ and not determinable by reaction with uranium nitrate. Our results apparently point to this latter type of production and excretion, and hence in its relation to uric-acid formation the increased elimination would indicate that the augmented uric-acid output was dependent on an increased decomposition of phosphorus containing nuclear material (nucleoproteid, nucleins or nucleic acids) of the cell. In the light of this increased elimination of organic phosphorus pentoxid, the decreased output of ammonia occurring at the same time might be explained, as hinted above, by a diminished formation of acid radicles, perhaps phosphorus pentoxid. The figures in the table do in fact indicate that an actual decrease in the output of phosphorus pentoxid, precipitable with uranium nitrate, did occur.

Thirdly, that the increased elimination of uric acid is attributable to a decreased oxidation of this compound in the liver as supposed by Beebe seems hardly probable. At any rate, the results adduced by this author do not seem sufficient to strengthen the supposition. With the exception of the figures presented by him, we know of nothing which would tend to substantiate the deductions. By this it is not intended to imply that the liver may not be one of the seats functioning in the decomposition of uric acid, although this also has not been decisively proven. But it must not be forgotten in this connection that alcohol² and other uric acid increasing agents (colchicum, sodium salicylates,³ etc.) tend to increase the activity of the liver and also its blood supply as shown by their acting as cholagogues. This certainly would speak against the view of an impaired function of this organ.

The creatinin elimination remained unchanged during the alcohol period. This fact would afford evidence against the view that the purins and creatinin have a common origin.⁴ Nor could any nitrogen sparing effect be noticed, such as shown by the tables of Beebe. That the nitrogen elimination during the alcohol periods is less than that during the control period, we can not deny, since it is so evident. But a consideration in detail of the individual days in the previous control period will plainly indi-

¹Schmiedeberg: *Arch. f. exp. Path. p. Pharm.*, xliii, p. 57.

²Salant: *Proc. Soc. exp. Biol. and Med.*, vol. i, p. 43.

³Kionka: *Ztschr. exp. Path. u. Therap.*, ii, p. 9.

⁴Burian: *Zeitschr. f. Physiol. Chem.* xliii. p. 546.

cate that the nitrogen output was steadily diminishing and, unfortunately, had not reached its lowest level when the administration of the alcohol began. Hence we are more inclined to attribute the decrease noted to a continuation of the fall inaugurated in the previous period than to any effect of the alcohol. Also one of the subjects (R.) was unaccustomed to alcohol, and in his case we should not have expected the appearance of a sparing effect; it is evident, however, that it was just in his case that the most evident decrease occurred. The explanation probably lies in the fact that with the high calorific value of the diet the small amount of energy supplied by the alcohol was insufficient to alter the nitrogen elimination in an amount greater than the daily variation. The decreasing values in the control period just alluded to are also evident in the uric-acid excretion. On this account the increase in uric acid observed is much more marked than the average figures actually show.

COLCHICUM AND SODIUM SALICYLATE.

As far as we are aware no experiments have been recorded on the effect produced by these drugs on the nitrogenous elimination during a nitrogen-free diet. Many experimenters have considered the action of colchicum on the elimination of uric acid, especially in pathologic conditions, but the diets have been such or the methods employed were of such doubtful accuracy as to render it useless to quote them. The consensus of opinion, as indicated by statements in Cushny's text-book on "Pharmacology," seems to be united, however, in considering that uric-acid elimination is not increased after its administration, and that its use is purely empirical.

Concerning salicylates, the same statements hold true in general, except that the weight of evidence lies emphatically on the side of an increased output of uric acid as the result of their ingestion. Recently, however, Morgenbesser¹ reported experiments conducted on a normal individual, which apparently indicated a difference in the action of these compounds, whether on normal or on pathologic metabolism of uric acid. In a three-day period, during which 30 gm. of sodium salicylate were ingested daily, he noticed an increase in the nitrogen elimination of from 9 to 16 per cent. This increase is made up almost entirely of urea. The uric acid and purin bases were diminished, however.

¹*N. Y. Med. Jour.*, 1906, lxxxiii, p. 760.

TABLE 4.—K. D. B.

Date.	Volume in c.c.	Sp. Gr. 1.0—	Total Nitrogen, gm.	Per cent of Total Nitrogen as					P ₂ O ₅ .		Acidity in c.c. — N Total.	Leucocytes.	Remarks.
				Grams Nitrogen eliminated as					Inorganic, gms.	Organic, gms.			
				Urea.	Ammonia.	Uric Acid.	Creatinin.	Undeter- mined.					
22	1410	88	2.37	60.3 1.43 66.3	13.0 .331 11.0	0.68 .016 0.53	18.5 .440 14.6	6.4 .16 7.5	.67	.....	115.5	.....	Starch-cream diet following alcohol.
23	1725	88	3.03	2.01 60.3	.334 15.5	.016 2.30	.443 17.2	.23 5.0	.78	.....	109.8	.....	Starch-cream diet + colchicum.
24	1455	88	2.52	1.52 80.7	.302 6.7	.058 3.5	.435 6.8	.12 2.3	.03	.....	100.5	.....	Starch-cream diet + colchicum.
25	1275	10	7.69	5.21	.515	.274	.520	.16	1.42	.....	142.5	.....	Meat diet.

TABLE 5.—H. C. J.

22	555	20	2.70	64.0	10.7	1.2	16.6	7.5	.79	.045	147.0	.....	Starch-cream diet follow. alcohol.
				1.73	.288	.032	.448	.20				.....	Starch-cream diet + colchicum.
23	615	21	2.36	59.7	11.8	1.0	18.4	8.2	.73	.038	145.5	.....	Starch-cream diet + colchicum.
				1.41	.280	.045	.436	.19				.....	Starch-cream diet + colchicum.
24	1005	11	2.39	62.3	12.0	2.9	16.9	5.9	.92	.099	163.0	.....	Meat diet.
				1.40	.287	.070	.804	.4	.86	.....	154.5	.....	Starch-cream diet.
25	535	23	5.86	78.7	8.9	.162	.464	.10			163.0	.....	Starch-cream diet.
				4.61	.523	1.3	9.6	4.0	1.03	.....	150.0	5600	Starch-cream diet.
31	385	25	4.38	79.5	5.6	.059	.425	.17	.87	.....	154.5	5340	Starch-cream diet.
				3.48	.249	.039	.420	.21	.74	.....	190.5	5560	Starch-cream diet + sodium salic.
1	520	22	3.60	72.7	9.1	1.1	11.3	5.8	.80	.....	120.0	6730	Starch-cream diet + sodium salic.
				2.68	.337	.024	.418	.20	.73	.....		
2	575	23	3.14	72.3	9.8	2.2	12.5	2.3					
				2.19	.313	.075	.422	.08					
3	1300	14	3.36	67.2	8.9	5.5	13.1	5.3					
				2.44	.331	.167	.400	.16					
4	2000	10	3.05	2.05	.272								

TABLE 6.—J. F. R.

22	470	21	2.06	56.3	15.2	3.2	22.8	2.5	.80	.012	183.5	.....	Starch-cream diet following alcohol.
				1.16	.314	.066	.471	.05				.....	Starch-cream diet + colchicum.
23	1080	18	2.94	65.6	10.9	4.1	16.7	2.5	1.04	.135	222.0	.....	Starch-cream diet + colchicum.
				1.93	.321	.120	.496	.07				.....	Meat diet.
24	1195	09	2.43	57.5	14.5	2.8	20.2	5.0	1.02	.113	196.5	.....	Starch-cream diet.
				1.40	.353	.060	.492	.12	1.25	.....	249.0	.....	Starch-cream diet.
25	825	21	6.80	79.5	6.8	4.0	8.0	2.7	1.16	.....	255.0	.....	Starch-cream diet.
				5.38	.475	.278	.552	.20	.88	.058	258.0	6150	Starch-cream diet.
31	525	22	5.30	80.0	6.4	1.9	9.3	2.4	1.00	.063	205.5	5340	Starch-cream diet.
				4.31	.346	.103	.502	.13	.89	.105	244.5	5560	Starch cream diet + sod. salic.
1	550	23	4.77	77.7	7.1	2.0	10.3	2.0	.97	.068	261.0	6030	Starch-cream diet + sod. salic.
				3.71	.339	.099	.495	.13					
2	750	22	3.70	71.6	10.6	1.9	13.4	2.5					
				2.65	.305	.072	.495	.09					
3	850	22	3.04	66.1	13.5	1.4	15.8	3.2					
				2.01	.413	.043	.482	.10					
4	950	20	2.64	61.3	10.9	4.2	16.3	7.3					
				1.62	.288	.112	.431	.19					

In our experiments the colchicum was administered in the form of the wine taken on the first day at two-hour intervals, seven doses of 30 m. each. As no typical symptoms occurred, the next day the dose was increased to 40 m. Four such doses were taken, beginning at 8:20 a. m., when at 2 p. m., diarrhea set in; this, however, was counteracted by bismuth subgallate, but later characteristic symptoms, nausea, headache, etc., appeared and the drug was discontinued.

The sodium salicylate was ingested at similar intervals in doses for the first day of 5 gr. dissolved in water; in all, 45 gr. during the day. On the second day 10 gr. and 30 gr. doses were administered, making altogether 110 gr. The ordinary effects of buzzing in the ears and heart-burn, etc., were experienced. Tables 4, 5 and 6 indicate the result obtained by us.

Concisely stated, the figures show that both colchicum and sodium salicylates inaugurated a distinct increase (both absolute and in percentage of total nitrogen) in the output of uric acid probably not accompanied by a diminished purin base excretion. In the case of the salicylate the increase amounted to about 250 per cent. A coincident decrease in the ammonia elimination did not occur in the case of colchicum, but was distinctly evident in both subjects the last day of the sodium salicylate administration. The creatinin elimination also decreased at the same time. The figures are not concordant with reference to the total nitrogen output. With colchicum, two of the three cases showed a rise in the nitrogen elimination, but in one of them the increase did not occur on the day when the output of uric acid was maximum. The salicylate showed less effect, there being but a slight augmentation of nitrogen excretion in one case, and this when the uric-acid elimination was not at its height. We are inclined to believe that these drugs do not effect the elimination of endogenous nitrogen, at any rate not to the extent mentioned in the textbooks. That they may cause an impaired internal assimilation of exogenous nitrogen and hence increased elimination, can not be denied. The unknown state of our knowledge concerning the factors which cause the excretion of creatinin under a creatinin-free diet renders a discussion of the results which we obtained somewhat vague and theoretical. The decrease in ammonia nitrogen and creatinin nitrogen observed as the effect of salicylates seemed to be offset by the increase in uric acid nitrogen and undetermined nitrogen. Just in what manner this rearrangement

is brought about or its metabolic significance can only be conjectured.

The inorganic phosphorus pentoxid elimination remained unchanged. The fragmentary figures which we present as to the organic phosphorus pentoxid indicate an increase in the elimination. As in our previous discussion of this point in its relation to the increased uric acid output, we feel that additional evidence is added to the view that the augmentation in output is caused by increased production from nuclear material of the cell.

The acidity showed no change; no leucocytosis made its appearance during the administration of salicylates. The foregoing results have been substantiated by similar experiments by Dr. A. T. Laird on patients suffering with gout.¹

CONCLUSIONS.

1. The elimination of uric acid on a purin-free or nitrogen-free diet is not a constant value for the same individual.

2. There appears to be evidence that the elimination of creatinin may be altered by conditions other than that of the creatinin in the food.

3. Alcohol increases the output of uric acid during a nitrogen-free diet; there occurs a coincident diminution in the elimination of ammonia; the organic phosphorus pentoxid excretion is also increased.

4. Both colchicum and sodium salicylate increase the output of uric acid, along with which takes place an augmented excretion of organic phosphorus pentoxid.

5. These facts seem to indicate that the rise in the uric acid elimination is caused by an increased formation as a result of augmented decomposition of nuclein-containing compounds of the cell.

6. From this it seems reasonable to decide that any agent which tends to cause an increased production of uric acid in the organism and thereby to increase its amount in the blood, must be contraindicated in those conditions where there exists a tendency for a deposition of urates to occur (gout). Probably the temporary beneficial effects of salicylates and colchicum observed clinically are the results of some secondary action possessed by them. That no permanent benefit results must be due to the fact that they are contraindicated.

¹Results to be published later by Dr. Laird.

EXPERIMENTAL MYOCARDITIS; A STUDY OF THE HISTOLOGICAL CHANGES FOLLOWING INTRA-VEINOUS INJECTIONS OF ADRENALIN.*

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PLATE I.

During a recent investigation¹ by Dr. Stanton and myself of the lesions occurring in the aorta of the rabbit as the result of repeated injections of adrenalin, the heart muscle, in the few instances in which it was examined, was seen not infrequently to be the seat of very definite degenerative lesions and occasionally also of proliferative changes. The association of such conditions with an experimental vascular lesion suggested the possibility of producing experimentally a chronic myocarditis analogous to that seen not infrequently in man in connection with grave arterial disease. As the material at hand was insufficient for a comprehensive study a second series of investigations was inaugurated. In these an attempt has been made to study the sequence of the changes and to determine to what extent they are due to the direct action of adrenalin and to what extent secondary to the arterial lesions. Few of the investigators who have produced vascular lesions with adrenalin have described the associated myocardial changes. Fischer² mentions the occurrence of necrotic and fibrous changes and, rarely, calcification. K. Ziegler,³ in a series of eight animals, found changes very similar to those hereinafter detailed.

Methods.—These were practically the same as in the earlier experiments by Dr. Stanton and myself, except that the initial dose was placed at one-tenth cubic centimetre, and rapidly raised to five-tenths and occasionally higher. All injections were made into the ear vein, and usually on alternate days. As previous experiments had shown that ten to twelve injections of adrenalin were sufficient to produce well marked arterial lesions, the injections in this series with a few exceptions were thus limited and the animals were then allowed to remain without further treatment for periods varying from one to three weeks. Thus the

* This investigation was conducted under a grant from the Rockefeller Institute for Medical Research. Read before the Johns Hopkins Medical Society, December 18, 1905. Published in *Jour. Exper. Med.*, 1906, viii, 400.

animals which survived the treatment represent an average injection period of twenty-four days, and a total elapse of from twenty-seven to forty-five days, a sufficient time, as indicated by the few preliminary observations, for the development of proliferative lesions in the myocardium. The animals dying during the course of the injections furnished sufficient material for the study of early degenerative changes.

The histological methods were limited to the use of Scharlach R for frozen sections, and of hæmatoxylin and eosin and Mallory's connective tissue stain for material hardened in Zenker's fluid and imbedded in paraffin.

Results.—Thirty-six rabbits were injected. These may be divided into two groups: the first group including fourteen animals which died during the period of injection, and the second group, twenty-two animals, which received from seven to fifteen injections and were killed at various intervals thereafter. The first group represents animals receiving from one to five injections, of which none died later than the tenth day. All animals dying in this stage succumb apparently to circulatory and respiratory disturbance and present at autopsy acute dilatation of the heart, oedema and congestion of the lungs, and occasionally hæmorrhages from the serous and mucous membranes or in the interior of organs. No macroscopic lesions of the aorta are demonstrable. When death follows the injection within a few minutes the cardiac dilatation, especially after the fourth or fifth injection, is extreme. Under such circumstances the heart loses much of its conical shape; the apex is more or less rounded and the over-distended auricles project laterally and greatly broaden the base. The left ventricle is very anæmic, and its pale almost bloodless substance is in sharp contrast to the blue-black color of the thin walled auricles.

Degenerative Changes.—The heart muscle of two of three rabbits dying within a few minutes after a single injection shows a well marked oedema causing more or less separation of the muscle fibres: in the third animal the oedema is slight. In all three the muscle fibres show irregular swellings, and the striations are somewhat indistinct. In one, multiple fractures of more or less homogeneous fibres are frequently seen, but as these conditions could not be found in either of the other hearts, they were considered as probably artifacts.

But one animal died after two injections. This death occurred

on the fourth day, thirty-six hours after the second injection. The œdema of the myocardium is so great as to cause wide separation of the muscle fibres in many areas. In some of these areas the fibres have lost their striations and are very granular. A few small areas of intense œdema take a diffuse blue stain similar to myxomatous tissue.

Three animals died after three injections. The notes on one of these follow:

RABBIT No. 25.—Male, weight 1670 grammes. The initial dose was one-tenth cubic centimetre of a one to one-thousand solution of adrenalin injected into the ear vein. On the following day the dose was raised to two-tenths and after an interval of two days it was repeated. The animal was found dead seventeen hours after the last injection. At autopsy œdema and congestion of the lungs and extreme dilatation of the heart are present. Histologically the heart reveals focal areas of most intense œdema. These occur not only in the wall of the ventricle but also in the papillary muscles. Crossing these areas are strands of connective tissue in the midst of which fragments of heart muscle may occasionally be seen. Some of these fragments stain well while others are merely shadows of fibres in the midst of the finely granular coagulated serum. Some have ragged irregular ends pointing definitely to displacement by fracture. Elsewhere the fibres are widely separated by a serous fluid, are very granular, have swollen nuclei, stain lightly with eosin, and have but indistinct striations. On cross section many of the fibres show a clear zone about the nucleus, evidently a perinuclear œdema. Occasionally, bundles of fibres appear as if torn across, the space between being filled with serum. The branching of the fibres is brought out well by the œdema. Swollen hyaline fibres are not infrequent. The large blood vessels are widely distended; the capillaries on the other hand are not prominent. No lesions are seen in the walls of the blood vessels.

In a second animal of this period which received three injections of one-tenth cubic centimetre the œdema was not so prominent, but on the other hand more extensive granular and hyaline degeneration of the fibres was present. After the fourth injection one animal died and after the fifth, six. These last represent the period of greatest mortality as well as the gravest degenerative lesions. All animals dying at this time showed extreme dilatation of the heart and histologically, in addition to the changes just described, a severe granular and hyaline transformation with more or less necrosis and disorganization. This condition is illustrated by the following protocol:

RABBIT No. 6.—Male, weight 1720 grammes. On September 26, 29, and 30 one-tenth cubic centimetre of adrenalin solution was injected into the ear vein; on October 2 and 3, two-tenths. The animal died during the

night of October 3. Upon post-mortem examination the heart was found to be dilated, the left ventricle pale and bloodless, and the lungs œdematous; the other organs were normal. Sections from three levels of the heart show general œdema and extreme disintegration of the muscle fibres. On both cross and longitudinal section the latter are seen to be irregularly swollen, granular, without striation, and not infrequently hyaline. The nuclei are swollen and frequently surrounded by a zone of œdema. In many fibres with extensive vacuolization of the protoplasm the nucleus does not stain. About such fibres small accumulations of mononuclear leucocytes are occasionally present and in some instances foci of epithelioid cells. In areas of extreme degeneration the outlines of the muscle fibres on cross section are indistinct and the picture is that of a uniformly granular mass with regularly placed lightly staining chromatic rings. These various changes affect the papillary muscles also. No changes in the vessels of the heart are demonstrable. Histological examination of the aorta is negative.

In other animals of this period the degenerative changes in the heart were of the same general character though varying more or less in degree. In two, a slight diffuse growth of connective tissue between the muscle fibres occurred.

Attempts to demonstrate fat in frozen sections of formalin hardened material treated with Scharlach R and counterstained by hæmatoxylin were uniformly negative. This method, however, revealed, in a few hearts, isolated fibres or small groups of fibres taking a diffuse yellow stain. These were more or less hyaline, and without nuclei; they however occurred in close relation to other similar fibres which did not thus react. This reaction has not as far as I am aware been previously described and its significance is not apparent.

The lesions in these hearts are due, manifestly, either to the direct toxic action of adrenalin upon the heart-muscle or to mechanical disturbances of the circulation caused by the effect of adrenalin on the vascular mechanism. They cannot be secondary to alterations in the walls of the large vessels, for in this series none of the animals exhibited macroscopic lesions of the aorta and in but three were degenerative changes evident microscopically.

Proliferative Changes.—Of the twenty-two animals surviving seven to fifteen injections, all but three showed degenerative changes in the myocardium, though seldom of the severe grade observed in the above descriptions. In twelve, more or less definite new connective tissue formation was evident. This new tissue was present, in some hearts, as focal accumulations of fine

connective tissue about individual hyaline or granular fibres or about small groups of such fibres. In others a diffuse arrangement of new tissue was demonstrable in considerable areas of the myocardium, and in two cases a very severe and diffuse fibrous myocarditis existed. The new tissue as a rule was most abundant about the blood vessels but had no relation to the sub-epicardial tissue or to the endocardium. It was very prominent in the papillary muscles. All parts of the ventricle suffered, though if any difference existed, the lesions were more severe at the apex. Focal accumulations of leucocytes were not prominent in the more chronic lesions, though occasionally present in the earlier conditions. When present these were usually of the lymphoid cell type. No suppuration or other evidence of infection was seen at any time; the lesion apparently was a pure connective tissue proliferation following degeneration of muscle fibres. The following protocol is that of the most advanced lesion observed:

RABBIT NO. 22.—Male, weight 1685 grammes. During a period of eleven days seven injections of adrenalin varying in amount from one-tenth to eight-tenths cubic centimetre were given (total amount five and two-tenths cubic centimetres). The animal was killed by chloroform five days after the last injection.

Autopsy.—Weight 1650 grammes. A small amount of clear serous fluid is found in the peritoneal and pleural cavities. The heart is large and firm; the walls of the left ventricle are distinctly thickened; the auricles are dilated. The entire circumference of the aorta at its origin is the seat of closely massed, depressed, round or oval, calcified areas which form a complete ring about the vessel and extend irregularly into the sinuses of Valsalva and along the ascending portion of the aorta for a distance of one and two-tenths centimetres. The orifices of the coronary arteries, in the natural position of the aorta, are entirely obscured but by pressure on the heart substance their presence is indicated by the escape of minute points of blood. These lesions cause considerable deformity of the vessel. A few isolated plaques of similar appearance are scattered elsewhere in the aorta and a considerable number are grouped about the origin of the cœliac axis.

Histology.—Sections through the entire ventricle from base to apex show extreme degeneration of muscle fibres and a new formation of connective tissue diffusely arranged, for the most part, but with here and there focal areas in which the muscle fibres are entirely absent. The muscle fibres as a rule are swollen, vacuolated, and exceedingly granular, though some are atrophied. Fibres with irregular constriction and swelling and more or less hyaline transformation are not uncommon. The nuclei are distorted, stain poorly, and frequently are entirely absent. In some fibres the nucleus is contracted and surrounded by a clear zone; in other fibres the nucleus is greatly swollen. The connective tissue is

PLATE I.

To Illustrate Dr. Pearce's Article "Experimental Myocarditis."

Albany Medical Annals, January, 1907.

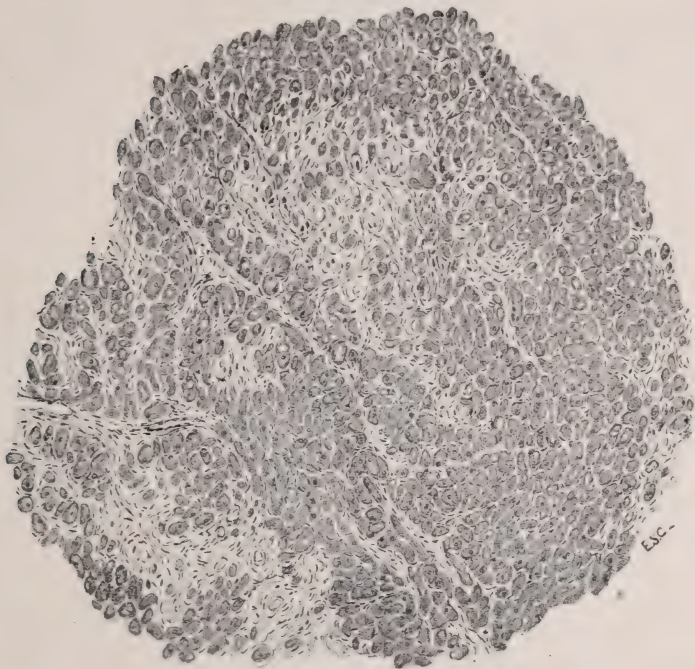


FIG. 1.—Fibrous myocarditis with more or less focal arrangement of the new tissue. Rabbit No. 22; see description in text.



C.C.W.

FIG. 2.—Higher magnification of a different portion of the same section showing the character of the muscle degeneration and also a moderately diffuse increase of connective tissue.

more abundant in the mid and inner portions of the ventricle and but slight beneath the pericardium and in the papillary muscles. The focal areas are more numerous at the apex of the ventricle and towards the endocardial surface. The connective tissue is very loose and œdematous. Between the elongated wavy vesicular nuclei is considerable intercellular substance practically free of lymphoid cells. While the arrangement of the new tissue is in general diffuse it is frequently more abundant about the blood vessels. In the focal areas the fibrillated character of the new tissue is very evident. The walls of the blood vessels show no change. Sections stained by Mallory's connective tissue method show everywhere between the muscle fibres a more or less well marked blue reticulum, while the focal areas take a deep stain relieved only by the deep red of fragments of hyaline fibres. The methods for demonstrating elastic tissue show a diffuse increase of fine elastic fibrils in the denser areas of connective tissue; they reveal no changes in the blood vessels.

Control Observations.—Although the literature treating of various experimental lesions of the myocardium of the rabbit contains no references to the occurrence of degenerative and proliferative changes in the hearts of apparently normal rabbits, it seemed advisable to determine definitely this point. As the sacrifice of a series of normal rabbits appeared undesirable the sections of heart muscle from a large number of animals injected with various organs and fluids of the dog during the past few years, in the course of several investigations of cytolytins, were utilized. A careful study of this material failed to reveal fibrous changes and showed few degenerative lesions. The latter were of slight degree and never of the type occurring after the administration of adrenalin.

Mode of Action of Adrenalin.—The association of a severe fibrous myocarditis with vascular lesions involving the orifices of the coronary arteries, as in the experiment given above in detail, suggests that the latter condition must have some causal relation to the myocardial changes. Indeed in the early part of the investigation it was thought that such a relation would eventually be demonstrated. Such, however, does not appear to be the case, for in one instance a myocarditis of equally severe type developed in the entire absence of lesions in the aorta. Moreover in six of the twelve animals exhibiting changes in the myocardium no lesions of the aorta were present, and in three of the remainder the lesions were but slight. The fibrous changes in the myocardium would appear therefore to be independent of the vascular lesions and not analogous to the myocarditis associated with arterial disease in man.

Other possible explanations are based on a direct toxic action of adrenalin on the heart muscle, or an indirect action through the mechanical disturbances of the circulation which it causes. Although the physiological action of adrenalin on smooth muscle is well known we have no knowledge of its toxic action on the various types of muscle cells. Degenerative lesions in the parenchymatous cells and in muscle cells other than those of the heart and aorta are rarely seen, and it seems improbable that the toxic principle of adrenalin, if it exists, should be so selective as to affect only the muscle cells of the heart and the smooth muscle of the aorta and its larger branches. Indeed the limitation of degenerative lesions to the heart and larger blood vessels, and their practical absence in all other tissues, speak against any toxic action and point to an influence of a mechanical nature affecting these structures alone.

The action of adrenalin in constricting the arterioles with consequent increase in blood pressure is well known. This increase of blood pressure is alone not sufficient to explain the lesions, for if it were, we would expect the vascular changes due to adrenalin to be more general. But it is admissible to conceive of a temporary ischæmia of terminal vascular territories, due to the direct action of the drug upon the smooth muscle cells of the coronary arterioles, which lasts a sufficient length of time to cause some interference with the nutrition of the affected areas. From physiological experiments this period would appear to continue about ten to fifteen minutes. If to this we add the increased contractile effort of the heart necessary to overcome the greatly augmented intravascular tension, we have factors sufficient to explain the degenerative lesions of the early experiments. The heart muscle under conditions of poor nutrition is pushed to its extreme power and dilatation results with injury of single fibres or groups of fibres. This injury is due in part to nutritive and in part to mechanical disturbance. That the dilatation is extreme, that the muscle is anæmic, and that serious alterations of the fibres are associated with this condition after but a single injection of adrenalin has been repeatedly demonstrated during the course of this investigation.

Practically the same explanation was advanced by Dr. Stanton and myself to explain the necrosis in the lesions of the aorta due to adrenalin. K. Ziegler's explanation of the vascular lesions is also very similar. He points out that the inner and middle por-

tions of the media of the aorta, the usual seat of necrosis, is the part of the vessel most scantily supplied by the vaso-vasorum and therefore most susceptible to necrosis at the time of vascular spasm and local anæmia.

Comparison with Other Experimental Lesions of the Myocardium.—The degenerative changes due to adrenalin do not conform in all respects to those caused by other agents used experimentally. The hyaline and granular changes in the muscle fibres, the alterations in striation, and the slight accumulations of lymphoid cells are similar to those found by various investigators (Comba,⁴ Welch and Flexner,⁵ and Mollard and Regaud⁶) who have studied the effect of diphtheria toxin on the heart muscle. On the other hand they differ in the absence of fatty changes, in the extreme œdema of the interstitial tissue, and in the disorganization of the fibres. In the same way also they differ from the lesions produced by Welch⁷ in his experimental study of the effect of high temperature and from those produced by Ribbert⁸ with staphylococcus pyogenes aureus, by Charrin⁹ with bacillus pyocyaneus, by Tallquist¹⁰ with streptococcus pyogenes, by Björkstén¹¹ with various bacteria or their toxins, and by Flexner¹² with ricin and abrin.

With the exception of the slight focal increase of connective tissue described by Charrin, Comba, and Mollard and Regaud, as a rare result of repeated injections of bacterial toxins, the only form of fibrous myocarditis mentioned in the literature of experimental lesions of the heart is that following ligation of the coronary arteries. The histological changes following such ligation have been described by Kolster, Porter, and Baumgarten¹³. The last, in his very detailed description, states that by the fourteenth day the new connective tissue had largely replaced the widespread areas of anæmic necrosis. This is of interest in connection with the lesions above described, in that the most marked connective tissue proliferation occurred in a rabbit killed sixteen days after the first injection.

Relation to Lesions in Man.—No definite comparisons can be made. The animals with acute degeneration of the myocardium and extreme dilatation of the heart which die suddenly after the fourth or fifth injection represent a condition apparently similar to that occasionally seen in man, where unusual strain causes sudden death due to an acute dilatation of a heart previously injured by some toxic agent or disturbance of nutrition. The

later fibrous lesions have no analogy to the commoner chronic forms of myocarditis in man associated with arteriosclerosis or following known toxic conditions. That some of the more unusual forms of fibrous myocarditis in man which are difficult of explanation may be due to circulatory disturbances of the same general nature as those caused by adrenalin injections in the rabbit cannot be denied. It is to these only that the results of this experimental investigation appear to have any relation.

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A NOTE ON THE PRODUCTION OF VASCULAR LESIONS IN THE RABBIT BY SINGLE INJECTIONS OF ADRENALIN.*

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The many publications which have followed Josué's demonstration of the power of adrenalin to produce degenerative changes in the rabbit's aorta have added much to our knowledge of the degenerative, infiltrative and repair processes which may occur in blood vessels, but unfortunately, from the point of view of comparative pathology, the value of this method of experimentation has been lessened by the failure to produce lesions entirely analogous to those of arteriosclerosis in man, the condition which it most closely resembles, and further by the absence of an adequate explanation of the manner in which adrenalin acts to produce such lesions.

This method, however, is so full of promise that it seemed advisable to continue the investigations¹ carried on in this laboratory, during the past two years, in the hope of producing, by varying the conditions of the experiment, lesions more closely resembling those of arteriosclerosis in man and at the same time to study by exact physiological methods the action of adrenalin. These studies are as yet incomplete and it is our intention in this communication to refer only to the lesions caused by single injections of adrenalin.

That repeated frequent injections of adrenalin are necessary to the production of experimental vascular lesions appears to be the opinion of all who have used it. Loeb and Githens² have stated that lapse of time is of more importance than frequency

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¹R. M. Pearce and E. McD. Stanton, "Experimental Arteriosclerosis," *Journal of Exper. Med.*, 1906, viii, 74; R. M. Pearce, "Experimental Myocarditis: A Study of the Histological Changes Following the Intravenous Injection of Adrenalin," *Ibid.* 1906, viii, 400.

²"The Effect of Experimental Conditions in the Vascular Lesions Produced by Adrenalin," *Amer. Jour. of the Med. Sci.*, 1905, cxxx, 658.

of injections or size of dose, and although they alone appear to have noted this fact they did not materially limit the number of injections in their experiments.

Our attempt to produce lesions by single injections was mainly for the purpose of testing the theory offered by Pearce and Stanton and later supported by the former in his study of experimental myocarditis due to adrenalin. This was, briefly, that in both the aorta and the myocardium the primary condition is a localized anemia, due to the direct action of adrenalin on the arterioles of areas not readily supplied by collateral circulation. To this factor is added the influence of the strain thrown upon these poorly nourished parts during the height of the increase in blood pressure, an influence sufficient presumably to cause permanent injury. If lesions could be produced by single injections of adrenalin this theory would be strengthened and that of direct toxic action weakened.

As it had been previously shown that necrotic foci were present in the aortas of animals receiving four and five injections, three groups of animals were given respectively one, two and three intravenous injections of $\frac{1}{2}$ to $1\frac{1}{2}$ minims of a 1:1000 solution of adrenalin (Parke, Davis & Co.). Although lesions were produced in animals receiving two and three injections they became of little importance in view of the very positive results following single injections. Of ten animals in the latter series four died within a few minutes after injection; of the remaining six, one of which died at the end of seven days and five of which were killed after sixty-five to seventy days, all showed very definite vascular lesions. The protocols of these experiments may be briefly summarized as follows:

EXPERIMENT 13.—A full-grown rabbit received in the ear vein on December 9th, one half a minim of a 1:1000 solution of adrenalin. No ill effect was noticed after recovery from the initial disturbance. On December 16th, the animal was found dead. Postmortem examination revealed edema of the subcutaneous tissues, minute hemorrhages in the intestinal serosa and about 20 c.c. of slightly blood-tinged fluid, in the peritoneal cavity, but no increase of fluid in pericardial or pleural cavities. The heart was somewhat dilated and its muscle pale. Beneath the epicardium were numerous punctate hemorrhages. The aorta throughout the thoracic portions presented a peculiar wrinkled appearance without well-defined thickening or change in color. The other organs were not noteworthy.

Histological examination of the aorta at different levels revealed an extensive and diffuse degeneration of the media with more or less complete necrosis of the muscle cells and a straightening and fusion of the

elastic fibres with a few angular bends. About two-thirds of the circumference of the vessel was involved and transversely the middle third of the media. In the heart muscle were focal areas of degeneration with slight increase of connective tissue and accumulation of lymphoid cells.

EXPERIMENT 17.—Rabbit weighing 1100 grams injected on January 4th with one half minim. Chloroformed March 14th; weight 1710 grams. Upon postmortem examination 75 c.c. of clear watery fluid were found in the peritoneal cavity. The aorta from its origin to celiac axis presented numerous irregular, calcified plaques varying in size from 0.2 to 1.5 cm. in diameter. The other organs showed no changes. Upon histological examination the aortic lesions were those of degeneration and calcification.

EXPERIMENT 20.—Rabbit weighing 1920 grams injected on January 9th, with one minimum of adrenalin. Killed March 14th; weight 2120 grams. Postmortem examination revealed no lesions except in the aorta which from origin to bifurcation was dotted with oval and linear elevated areas of thickening and calcification. The areas were larger and more abundant in the ascending portion. Well-marked thickening was present about the orifices of the coronary arteries. Histological examination showed the usual picture of necrosis and calcification.

EXPERIMENT 21.—Rabbit weighing 2230 grams received on January 9th, one and one-half minims of adrenalin and was chloroformed on March 15th. At autopsy no changes were found except in the aorta which presented just above the celiac axis a single irregular area of a calcification 0.8 cm. in diameter. Upon histological examination very extensive repair was evident about the calcified area and especially in the subintimal tissues.

EXPERIMENT 22.—A rabbit weighing 1860 grams was injected on January 9th, with one and one-half minims of adrenalin. Chloroformed on March 15th; weight 1910 grams. In the aorta just above celiac axis are two calcified patches, the larger of which measures 0.5 cm. in diameter. The histological picture was that of calcification with no repair.

EXPERIMENT 23.—Rabbit, 1950 grams in weight, was injected January 9th. Killed March 14th; weight, 2700 grams. In the upper portion of abdominal aorta is one small wrinkled thickening 0.3 mm. in diameter which presents histologically, the picture of calcification.

These results, while they offer no explanation of the mode of action of adrenalin in producing vascular lesions, simplify the mode of investigation in that the problem is limited to the study of the effect of single injections, and comparisons may sharply be drawn between lesions so produced and similar lesions caused by prolonged administration of other substances, as nicotin, digalen and barium chloride.

It is evident, however, that in view of these results the theory of direct toxic action is hardly tenable, while that which recognizes a combination of vaso-vasorum disturbance, local anemia and vascular strain is greatly strengthened.

A FURTHER STUDY OF THE EXPERIMENTAL PRODUCTION OF LIVER NECROSES BY THE INJECTION OF HEMAGGLUTININATIVE SERA.*

By RICHARD M. PEARCE, M. D.

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The observations herein detailed are supplemental to an earlier communication,¹ in which was described the power of the hemagglutinins contained in various cytolytic immune sera to form red blood corpuscle thrombi, and also the relation of the latter to necroses of the liver. In a later study² of the repair following lesions of the liver so produced, abundant confirmation of the earlier work was afforded. These observations, however, have not been generally accepted as conclusive. Though no other explanation of the necrosis has been offered, the masses of fused corpuscles in and about the necrotic tissue are still described by some investigators as artifacts, or as the consequence of post-mortem changes. It seems advisable, therefore, to present various control observations which offer very conclusive evidence in support of the views expressed in my first communication.

Without going into detail the lesions under consideration may be described as hyalin necroses, the position and extent of which vary according to the amount of serum³ administered. Small doses cause focal lesions more or less isolated and irregularly distributed; large doses produce a diffuse necrosis which spares only the tissue about the larger portal spaces. The lesions are found only in the superficial portions of the liver, seldom in the deeper portions. In animals dying before the appearance of necrosis an intense congestion exists. Under such circumstances, the vessels are found upon microscopic examination to be distended by red blood corpuscles so closely massed as to present oftentimes a homogeneous appearance. The coalescence of red cells is very evident in the portal veins, while in the capillaries the occlusion leads to a distension so great that the columns of liver cells are more or less obscured. This congestion is less evident about the larger portal spaces. Endothelial cells, fibrin and bacteria do not enter into the formation of the thrombotic

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masses. An occasional leucocyte or endothelial cell may be seen, but as a rule these are absent.

Such observations have led me to conclude that the cause of the necrosis is an obstructive congestion of the capillaries and the smaller branches of the portal vein by fused masses of red cells. To the effect of this obstruction, essentially a thrombosis, is added the pressure exerted by the perivascular edema and the over-filled bile capillaries. In parts of the liver midway between the larger portal spaces these factors are sufficient to overcome the pressure in the capillaries from the hepatic artery, and necrosis results; the cells in the neighborhood of the larger portal spaces, on the other hand, are preserved through a better blood supply, dependent, presumably, upon the greater arterial pressure in this region.

Although the rôle of the hemagglutinin in producing these necroses seems to me to be well established, it is necessary, as nearly all cytotoxic sera have manifold activities, to control by experiment other possibilities. Of these the most important are the action of the toxic products of hemolysis and the direct action upon the liver cells of some toxic substance in the injected serum.⁴ This last seems improbable, as a recent study⁵ of a number of cytotoxic sera, including hepatotoxin, has shown that the necroses do not result from somatogenic cytotoxins unless the serum has a high hemagglutinative power. Similarly sera of great hemolytic power do not cause necrosis unless the agglutinative power also is great. Moreover, it was shown that a serum of great agglutinative but no hemolytic power—that prepared by injecting bile—produces necroses as widespread and characteristic as those caused by sera of the highest hemolytic power. Nevertheless, as the sera which produce necrosis are, with the exception of bile serum, those which have great hemolytic activity, it seemed advisable to carry out various control experiments to determine whether or not this hemolysis had any share in the development of the necroses. It is to this phase of the subject that this communication is devoted.

Methods.—All attempts to remove from a serum its hemolytic activity, leaving only the agglutinative power, have been unsuccessful. The removal of this power by heating, so valuable in experiments in the test-tube, is not applicable to animal experiments, as the serum is activated by the complement of the injected animal. The action of chemicals and digestants affects

the agglutinin as well as the hemolysin. The same is true of changes in serum due to lapse of time after withdrawal, and also of the serum of animals which are not bled for several months after the final injection. Even the positive results obtained by bile serum might be considered inconclusive owing to the possibility of a natural dissolution of the red cells after agglutination with the escape of toxic substances capable of causing necrosis. It became necessary, therefore, to determine what lesions might be produced in the liver by injecting the products of hemolysis and by producing experimental hemolysis by various substances having little or no agglutinative power. If such substances produced no necroses the theory of agglutinative thrombi would, in a negative way, be greatly strengthened.

Incidentally, numerous vital injections have been made to demonstrate that the masses of red cells do cause a complete obstruction of the vessels during life not only in areas of complete necrosis, but also at various periods preceding necrosis.

Experiments with the Products of Hemolysis.—I. To produce in the living animal a more or less continuous blood destruction, rabbits have been injected daily with normal dog's serum. Although this serum causes in the test-tube an agglutination of rabbit's red cells, this agglutination is very fine and disappears very rapidly as the result of the powerful hemolytic action which it possesses. Four rabbits were injected. Each received an initial dose of one cubic centimeter of serum in an ear vein, and the dose was gradually increased according to the condition of the animal. Two died on the twenty-first and twenty-second days respectively, the daily dose having reached ten cubic centimeters. The other two died on the thirty-sixth day, the dose having been suddenly increased from fifteen to twenty cubic centimeters. All showed the characteristic lesions of experimental anemia, *i. e.*, large swollen spleen, hyperplasia and edema of the lymph nodes, a diffuse dark red appearance of the bone-marrow, fatty changes in the liver, heart, and kidneys, petechial hemorrhages of the pericardium and lungs, edema of the lungs, and a hydremic state of the blood with lax clotting. The serum of one animal bled just before death was quite deeply colored by hemoglobin. In none of these animals could focal lesions of the liver be seen macroscopically. Histologically, all showed extreme granular and vacuolar degeneration, and one extreme fatty transformation. In none were areas of hyalin necrosis found.

II. In a similar way dogs received intravenous and intraperitoneal injections of horse serum which, though powerfully hemolytic for dog's corpuscles, is but slightly hemagglutinative. Injections of this serum in doses varying from 1:800⁶ to 1:280, and repeated every three to four days until four injections had been made, failed to produce focal lesions of the liver, although the presence of albumin in the urine and fatty changes in the kidney indicated the toxic action of the serum.

III. For the study of the effect of blood disintegration by a known chemical body toluylendiamin⁷ was selected. This substance produces in the test-tube a slow hemolysis of the red cells, but no agglutination other than the mechanical massing of the cells after standing for several hours. Administered to the dog by the mouth it causes an exquisite experimental anemia accompanied by icterus. Six dogs received toluylendiamin with their food. Of these one was given a dose sufficient to cause death within twenty-four hours. The others were given small doses almost daily and sacrificed after one, three, five, six and eight weeks. The usual procedure was to begin with one-tenth of a gram and increase the dose very gradually to one-half a gram. When it was desired to terminate the experiment a fatal dose was given. Animals surviving a week or longer become emaciated and jaundiced, and albumin and bile appear in the urine. The blood⁸ picture and the changes in the bone marrow, spleen and lymph nodes are those characteristic of experimental anemia.

The liver is of a greenish yellow color mottled with large, irregular yellowish or brownish areas. Its surface is smooth or finely granular, its substance firm and one section of a uniform greenish yellow color with smooth glistening appearance. In five of the animals of this group no trace of hyalin necroses similar to those caused by cytotoxic immune sera could be found upon either gross or microscopic examination. In the liver of the animal killed in the sixth week were found irregular focal areas of granular necrosis and extensive infiltration of leucocytes with the formation of a fibrin network. In these areas, which in no way resembled the necroses due to agglutinative thrombi, were masses of bacteria. They must therefore be considered as due to infection and not to the products of blood destruction. All the livers exhibited extreme granular and vacuolar degeneration amounting, practically, in some instances to necrosis of individual cells. The bile capillaries were greatly

engorged with bile and could be followed easily both without and within the cells. No accumulated masses of red cells could be seen in the capillaries.

IV. Although the above experiments appeared to prove conclusively that the products of extensive hemolysis occurring in the living animal are not capable of causing necrosis in the liver, it seemed advisable to determine the effect of such products produced artificially. For this purpose eight dogs received injections of laked blood. The solution of hemoglobin was prepared from normal dog's blood by the addition of hemolytic immune sera. The first experiments were extremely unsatisfactory, for it was found that even after standing forty-eight hours the laked blood contained a sufficient excess of agglutinin to agglutinate red cells in the test-tube, and as it produced liver necrosis in injected animals it was impossible to draw any conclusions from such experiments. However, by centrifugalizing the fresh mixture of cells and serum after standing in ice for a half hour it was possible to remove in the supernatant fluid the excess of immune serum. Then, by diluting with salt solution and adding normal dog's serum to the residue, the hemolysin fixed to the agglutinated cells was able to complete the hemolysis at room temperature. The fluid thus procured was a rich solution of hemoglobin with little or no agglutinative power. The injection of this fluid, after standing one to four days, into the mesenteric veins in doses as high as sixty cubic centimeters (1:100), caused fatty changes in the kidney but no necrosis of the liver.

The Production of Necroses by the Injection of Agglutinated Masses of Red Cells.—In the earlier experiments on this subject several attempts were made to demonstrate the mechanical nature of the occlusion of the capillaries by injecting small amounts, five to ten cubic centimeters, of agglutinated corpuscles into the mesenteric veins. These experiments have been repeated with larger doses. Large amounts of blood agglutinated by an immune serum were allowed to stand in the cold for ten to fifteen minutes and then washed hastily by centrifugalizing in two changes of salt solution to remove the excess of serum. Fifty to eighty cubic centimeters of such a mixture have been injected directly into the mesenteric veins of dogs weighing five to seven kilos. In these animals hemoglobinuria occurs and necroses are found in the liver, but not comparable in number or extent to those produced by the serum itself. Those which do occur are,

however, typical hyalin necroses. The occurrence of hemoglobinuria in these animals would at first glance appear to vitiate the experiment as it is possible to conceive of the necroses being due to the products of hemolysis and not to mechanical obstruction of the capillaries. Control experiments, however, demonstrated that the injection of the same amounts of normal defibrinated blood into the mesenteric veins causes hemoglobinuria of equal degree but no lesions in the liver. It therefore seems fairly conclusive that the necroses following the injection of clumped corpuscles are due to mechanical obstruction, and that in the production of these necroses the products of the associated hemolysis play no part.

Demonstration, by Vital Injections, of the Occlusion of the Liver Capillaries.—In order to demonstrate that the masses of fused red corpuscles do actually occlude the blood vessels, a series of nine animals, which had previously received hemagglutinative sera, have been injected with carmine during life. For this purpose an ammoniacal solution of carmine, prepared according to the formula of Chrzonszczewsky,⁹ was prepared and injected as nearly as possible under natural conditions of pressure.

This preparation penetrates readily the capillary system of all organs and is of especial value in demonstrating occlusion of the capillaries of the liver. With animals under ether anesthesia, ten to twenty cubic centimeters of ammoniacal carmine were injected into the hepatic artery, into the veins of the mesentery, and into the femoral vein at various periods after the injection of the agglutinative serum. For detailed study frozen sections of formalin-hardened material stained in hematoxylin have given the best results. In no instance have pigment granules been found in the vessels of the necrotic foci, though they are seen closely packed in the vessels about such areas. The lesions in all these animals were of the diffuse type and there was considerable evidence to indicate that not only the capillaries, but branches of the portal system of considerable size, were occluded. Similar injections made four hours after the introduction of the agglutinative serum penetrate the superficial portions of the liver to but a slight extent and very irregularly, whereas under normal circumstances such injection produces a diffuse impregnation. It seems conclusively proven, therefore, that the fused masses of corpuscles cause a mechanical obstruction to the circulation.

No attempt has been made in connection with these injection experiments, mainly because the necrotic lesions were so diffuse, to determine the relation of the smaller focal lesions to the vascular systems of the lobule. Considerable evidence is at hand, however, to indicate that the immunity to necrosis of the tissue immediately about the larger portal spaces, a condition constantly seen in the diffuse lesions, is apparently due to the influence of arterial pressure. Opie¹⁰ has recently shown by injection experiments that the greater pressure of the arterial blood supply in the periphery of the liver lobule is sufficient to keep this portion of the lobule practically free from injected particles of foreign material, thus explaining the relative infrequency of necrotic lesions in this area. It appears plausible that the same theory applied to the blood supply of the tissue about the portal spaces would explain the immunity of these areas to necrosis. All evidence indicates that the cause of the necrosis is an obstructive congestion of the capillaries and the smaller branches of the portal veins by fused corpuscles. The mechanical pressure exerted by the perivascular edema and the distended bile capillaries probably aids the occurrence of necroses by neutralizing, in part at least, the pressure in the capillaries derived from smaller branches of the hepatic artery. The necrosis occurs uniformly in those portions of the liver in which no large vessels are present. In portions in which the latter are present, as the neighborhood of the portal spaces, the arterial pressure is sufficient to preserve the circulation in their immediate neighborhood, while the tissue at a distance is destroyed. Only thus is it possible to explain the normal tissue in the midst of large necrotic areas. The same difference in pressure may explain also the greater extent of the necrosis at the periphery of the liver.

Conclusion.—Whether or not red blood corpuscle thrombi may be concerned in the focal necrotic lesions of man, a question which has been discussed elsewhere,¹¹ it would appear to be definitely established that such thrombi do occur in the experimental lesions caused by sera possessing hemagglutinative power and that, aided perhaps by the associated perivascular edema and the engorgement of the bile capillaries, they produce necroses of the liver. That the capillaries of such areas are actually occluded by fused red cells is demonstrated by the experiments here described, as is also the inability of the products of hemolysis to produce such necroses.

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4. In this connection also must be considered the question of autolysis. It is possible that through either some substance in the injected serum, or some substance formed in other organs as the result of altered metabolism, the synthetic functions of the liver cells are destroyed, but not the autolytic ferments, and that, through the activity of the latter, destruction of the cells occur. The resemblance of the lesions to those of acute yellow atrophy and allied conditions in man is very suggestive. Chemical studies based on this supposition are now under way.
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REGENERATIVE CHANGES IN THE LIVER:

A STUDY OF EXPERIMENTAL LESIONS IN THE DOG.*

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PLATE II.

Elsewhere¹ I have described a form of experimental cirrhosis which in its nature is essentially a repair of extensive but more or less irregularly arranged necroses produced by the action of hemagglutinative sera. To this account the present communication is more or less supplemental in that it deals with some of the more important of the finer details of the regenerative

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process, which, for the sake of brevity, were merely outlined in the earlier communication.

The reparative process to be described is of peculiar interest in that it follows definite necrotic lesions produced by an agent reaching the liver through the circulation and not those caused by direct mechanical injury. For this reason, and also because of the resemblance of the early necrotic lesions to acute yellow atrophy and of the later reparative process to cirrhosis, a comparison with the regenerative processes in the liver of man is possible.

Our knowledge of the regenerative changes in the liver is based mainly on the studies of the repair following mechanical injuries and that occurring in acute yellow atrophy and, to a lesser extent, in cirrhosis of the liver. The principal experimental studies² since the introduction of aseptic methods and the development of our knowledge of indirect cell division are those of Podwyssozki,³ Ponfick,⁴ and v. Meister.⁵ A comprehensive review of the reparative process in acute yellow atrophy may be obtained from the writings of Meder,⁶ Marchand,⁷ Stroebe,⁸ Barbacci,⁹ and MacCallum,¹⁰ while the regenerative changes in cirrhosis, first emphasized by Kretz,¹¹ have since been studied by MacCallum¹² and Kelly.¹³

Podwyssozki, who has made the most comprehensive study of the repair of wounds of the liver produced in various ways, concludes that small losses of substance are repaired, without the formation of fibrous tissue, by proliferation of the liver cells and the cells of the small bile ducts. In more serious injuries in addition to such proliferation a more or less abundant formation of connective tissue occurs. In his studies he used the rat, cat, rabbit and guinea-pig. The formation of new liver cells by mitosis begins after twenty to forty-eight hours and mitotic figures are very abundant by the fourth to the seventh day. Mitoses are also seen in endothelial and connective tissue cells and in Kupffer's cells. The newly formed liver cells are usually large and pale and of round or oval shape. The bile ducts, especially the interlobular, proliferate freely and from them new liver cells may develop directly or they may form large, irregular sprouts in which multinucleated masses of cells appear and from which new liver cells separate. Podwyssozki emphasizes the similarity of the repair of liver cells in pathological conditions to their embryonic development.

Ponfick's experiments, which were repeated by v. Meister, demonstrate that after extirpation of large portions, three-quarters to four-fifths, of the liver of the rabbit a hyperplasia of the remaining substance causes a restoration of the liver to its original size. This proliferation, which is characterized by the formation of lobules of unusual size, is a condition analogous apparently to the vicarious hypertrophy of paired or multiple organs and is due almost entirely to a regeneration of liver cells. Mitoses were first observed after forty-five to seventy-two hours and soon became very abundant. Large, pale, finely-granular cells, often with two nuclei, were very numerous and apparently represent newly formed cells. In the bile ducts and blood vessels also was seen evidence of proliferation, though mitotic figures could not be readily demonstrated.

The so-called adenomatous nodules ("multiple knotige hyperplasie") described by many investigators, and studied especially by Marchand and Barbacci in connection with acute yellow atrophy and cirrhosis, may be considered as the result of a hyperplasia comparable to that produced experimentally by Ponfick and v. Meister. A similar hypertrophy of massive character has been observed by Ponfick¹⁴ in association with echinococcus cyst.

Practically all who have studied the repair process in acute yellow atrophy are in accord concerning regeneration by mitosis of surviving liver cells, but some difference of opinion exists in regard to the solid and tubular cell-strands usually described as newly-formed or pseudo bile ducts. All recent investigators have abandoned the idea that these structures are atrophied rows of liver cells and consider them as sprouts from the small interlobular bile ducts growing into the necrotic lobule. By a gradual transformation of the cells of such sprouts true functioning liver cells are formed. Marchand, however, states that similar structures may also be formed by the proliferation and fusion of the true liver cells in small islands of liver substance which have escaped the general destruction. This latter view Stroebe considers unproven and MacCallum in the one case which he studied was not able to demonstrate this form of proliferation.

The recent studies of regenerative changes in cirrhosis of the liver were undoubtedly suggested by Kretz's statement that this disease is the result of successive processes of repair following repeated focal degenerations of the parenchyma. These studies treat of changes in the size, shape and internal arrangement of

the lobule, of its altered blood supply, and of the origin and appearance of the newly-formed cells. In general, the proliferation is similar to that in acute yellow atrophy, but, owing to the chronicity of the lesion as seen at autopsy, mitotic figures are rarely found in the parenchymatous cells. The new formation of such cells, however, is indicated by the occurrence among cells of the usual appearance of large, clear, round, plump cells with two or more nuclei and devoid of fat and pigment. What has been said of the newly-formed bile ducts in acute yellow atrophy holds for the similar structures found in cirrhosis.

The present study is based on material from the livers of sixteen dogs representing periods varying from thirty-eight hours to thirty-six days after the injection of the serum. As the larger portion of the animals died during the first week, it is possible to present an accurate account of the sequence of reparative changes to the end of the seventh day. The late changes are also well represented by those animals which survived the acute disturbance. The middle period, however, is not well represented.

The degree of repair has been found to vary considerably at any given period. This is particularly true of the group of five animals representing the period of forty-eight to sixty hours. This difference appears to be dependent in part upon the extent of necrosis and in part upon the general condition and age of the animal. It has been observed, not infrequently, in animals not included in this series that when extensive necrosis of the liver was associated with severe general disturbances, indicated by marked hemoglobinuria and exhaustion, no repair was evident even in those animals surviving to the end of the second day. These various influences have been emphasized by Podwyszoeki, who found that mitoses are most abundant when the conditions of nutrition are best. Thus he found mitosis to be delayed in starved animals, after considerable loss of blood and in old animals. In the latter they may fail to appear, as may they also in the neighborhood of suppuration. They are very seldom seen at the margin of areas of complete necrosis.

The primary necrotic lesion may be described as follows: After twenty-four to forty-eight hours the liver presents a uniformly mottled appearance; fine, irregular, yellowish brown or grayish yellow, non-elevated areas being sharply separated from deeply congested or occasionally even hemorrhagic areas. On

section the brownish portions have a distinct hyaline appearance. The superficial portions of the liver are uniformly more extensively involved than are the deeper portions, though in some of the small lobes the necrosis may be quite general. Histologically, the necrosis, which is hyaline in character, may involve all portions of the liver tissue except circular areas of varying size in the immediate neighborhood of the larger portal spaces.

In the necrotic areas the destruction, as far as the hepatic cells are concerned, is uniform and complete; the cells of the capillaries may, however, persist. A narrow ring of liver cells with vacuolated protoplasm and pyknotic nuclei separates, as a rule, the necrotic from the normal tissue. Leucocytic infiltration may or may not be present. The capillaries of the necrotic tissue are widely dilated and tightly packed with swollen and distorted red blood corpuscles which may occur in masses or may retain distinct outlines. In the congested portal veins, on the other hand, the fusion is quite constant, the plugs for the greater part having a distinctly hyaline appearance. The perivascular spaces of the capillaries are distended with serum, and the bile passages of all sizes are, as a rule, dilated and engorged with bile.

The earliest evidence of repair, as indicated by karyokinesis of parenchymatous cells, is seen in the liver of an animal which died exactly thirty-eight hours after injection. The necrosis in this instance is very diffuse and accompanied by slight leucocytic infiltration. The destruction of liver as well as endothelial cells in the affected areas is complete. Between the completely necrotic cells and the normal cells is seen a rim of cells two or three deep in which the cell structure is more or less preserved; in these the nuclei are visible but the cell protoplasm is very granular and contains many vacuoles. It is noteworthy that mitoses are not found in such cells but only in the well preserved cells beyond (see Fig. 1). They are very few in number and are found only after prolonged search. This agrees with Podwysozki's observation that mitoses occur only in perfect cells at a distance from the necrosis. There is some evidence, however, as will be shown later, that the nuclei of apparently degenerated cells, at the edge of the necrosis, may divide by direct division to form multinucleated protoplasmic masses. There is no evidence at this period of proliferation of the endothelial or connective tissue cells or of the cells of the bile ducts.

The period from forty-eight to sixty hours is represented by material from five animals. In these the repair is of the same general character but differs somewhat in degree. Aside from the mitoses of liver cells, which are more abundant, the most striking change is the proliferation of the cells of the supporting framework. The necrotic foci are, on all sides, separated more or less from the normal liver cells by a zone of closely massed newly-formed endothelial cells (see Fig. 2). Proliferation of the same cells occurs in the persisting capillary framework in the midst of the necrosis. The nuclei of these cells, although distinctly vesicular in character, are rich in chromatin and stain deeply. The protoplasm as a rule cannot be distinguished but it may be seen as a faint ring; when distinctly evident it takes a bluish tinge with hematoxylin. Although mitotic figures in such cells are seldom seen the above characteristics indicate a rapid proliferation. Not infrequently at the periphery of the lobule several of these newly-formed endothelial cells surround, in a ring-like manner, hyaline fragments of necrotic cells and simulate in appearance multinucleated cells into which, as will be shown later, many of the cells develop. Occasionally a stray leucocyte is seen in a necrotic cell. Phagocytic activity on the part of single cells within the necrotic focus is indicated by the occasional inclusion of a red blood corpuscle or fragments of necrotic liver cells. A very definite phagocytosis is also evident in the endothelial cells and especially in the Kupffer cells of the capillaries in the immediately adjacent normal liver. Here ten or twenty compressed and poorly staining blood corpuscles may be seen in a single endothelial cell. It is possible that some of these cells may have migrated from the spleen, where they are also very abundant, but the majority are definitely attached to the walls of the interlobular capillaries. In the endothelial cells definite mitotic figures, which can be readily distinguished from those in liver cells, are occasionally seen. They are, however, in proportion to the amount of proliferation, very few in number. Mitoses in liver cells are easily found, but always at a distance from the necrosis. They are never found in the vacuolated cells at the periphery, though between such the proliferation of endothelial cells is most active.

The picture of the third day is that of more advanced replacement of the necrotic cells by young endothelial and connective

tissue cells. In many small areas these cells have more or less obscured the hyaline fragments of liver cells. Mitotic figures are more numerous in both liver and endothelial cells and for the first time are seen the large, pale oval or round liver cells described by Podwyssozki, Ponfick, and v. Meister. There is also evident an increase of chromatin in the nuclei of the liver cells. This occurs as a stippling due to numerous closely packed dots and granules which stain deeply and is suggestive of a premitotic activity.

During the fourth, fifth, sixth, and seventh days, the repair progresses with great rapidity but shows few new features. The bulk of the necrotic tissue is gradually replaced by the rapidly proliferating cells. Here and there, however, a few isolated necrotic hyaline masses, usually surrounded by very definite multinucleated cells of endothelial origin, may be seen. Mitotic figures in liver, endothelial and connective tissue cells are readily recognized; in the liver cells they are very abundant, three or four occurring sometimes in a single field of a high power lens. This rapid formation of liver cells occurs not only at the periphery but may, by the fourth day, be seen also in the midst of the destroyed area. Intercellular fibrillæ in the new tissue, first recognizable on the fourth day, rapidly increase and are very definite by the seventh day. Lymphoid cell infiltration first becomes prominent at this period and persists to a moderate extent in the later lesions. Such infiltration, however, is more abundant in the portal spaces, where there is also a proliferation of connective tissue, than in the repair about the necrotic areas. The leucocytic infiltration remains slight.

Despite the most careful study it has been impossible at this stage to determine anything definite concerning the proliferation of the small bile ducts. Not infrequently cells arranged in a circular or longitudinal manner and closely resembling newly-formed bile ducts have been seen. These have no relation to adjacent bile channels and no definite lumen. They closely resemble, however, the processes which Marchand described in yellow atrophy as arising from isolated groups of liver cells and assuming the appearance of pseudo-bile ducts. That they are such appears to be very probable, but absolute demonstration is lacking as it is not possible, even in serial sections, to differentiate in the closely packed mass of proliferating endothelial and

connective tissue cells between them and other newly-formed structures. As will be shown later, however, the proliferation described by Marchand can be definitely demonstrated in the more advanced repair and it is possible that the ill-defined structures here described (fifth day) represent the earliest stages of this process.

Of the lesions beyond the seventh day, some on account of the small areas involved in the primary necrosis are unfortunately of little value in studying the intermediate stages of repair. In all, however, there is a very clear picture of the gradual transformation of the young granulation tissue into a very definite connective tissue and of the slow replacement of the latter tissue by newly-formed liver cells, but no new features are presented. In one (eleventh day) endothelial cells in which red blood cells are frequently seen are very numerous; in another (twenty-fifth day) lymphoid and plasma cells, usually present in but small numbers, are very abundant in and about the portal spaces.

The lesions of these intermediate stages, as well as the minute necroses of earlier periods, have been studied carefully to determine whether small areas of necrosis may be repaired by proliferation of liver cells alone without the formation of new connective tissue. Without going into detail it may be stated that such repair, except in minute areas involving but a few cells, has not been noted. In small areas the new formation of liver cells may be so abundant that the appearance may be that of simple hyperplasia of the parenchyma, but by careful study and the use of special stains a new formation of the supporting tissue above that necessary for simple restitution can always be determined. There is, on the other hand, very definite evidence, based upon a comparative study of late lesions of varying extent, that the superfluous connective tissue may be reduced to a minimum when the full development of the new liver cells is reached. Moreover, it can be definitely stated that in the smaller necroses a new formation of bile ducts does not occur; such proliferation takes place apparently only after the destruction of large areas of liver tissue.

The most advanced stage of repair occurring in this series was seen in an animal killed on the thirty-sixth day. The condition present, essentially a cirrhosis, may be described in a general way as a replacement of very extensive necrotic areas by broad

bands of very vascular connective tissue. In and about the new tissue important changes in the liver cells, as well as an excessive formation of new bile ducts, are seen. The liver cells outside of the zone of new tissue are compactly arranged, often irregular in shape and, at the extreme edge of the reactive process, even misshapen. The majority stain normally, but some are swollen and pale with a stippling of the nucleus. Mitotic figures may still be seen in such cells but they are widely scattered. Between these more nearly normal liver cells and the new fibrous tissue is a narrow margin in which fragments of necrotic liver cells still persist. Into this zone from the periphery project large multinucleated liver cells very irregular in shape. Similar cells, with oftentimes ten to fifteen deeply staining nuclei, surround fragments of necrotic cells. Some of these giant cells are in continuity with the strands of normal liver cells, while others are entirely isolated. Such cells may contain four or five hyaline particles which they apparently englobe and disintegrate. These multinucleated masses are essentially foreign body giant cells and though a few of the smaller cells are certainly of endothelial origin the majority appear to be altered liver cells. The protoplasm, which is large in amount, is characteristic of that of the liver cell in every way and, moreover, these cells not infrequently may be seen in direct continuity with strands of liver cells of normal appearance. Isolated giant cells of similar structure but without inclusions are also seen. The material enclosed is in greater part hyaline necrotic fragments of liver cells, but consists also, as determined by micro-chemical tests, of calcified material, occurring as smooth, almost colorless disks. Between these cells a fine connective tissue penetrates, but the great bulk of this zone is made up of giant cells. Similar cells are also seen in the midst of the denser fibrous tissue, sometimes occurring singly, but more frequently in connection with isolated islands of liver tissue.

A careful study of these cells leads to but one conclusion. They are altered liver cells which have developed as the result of an irregular type of nuclear division and which have acquired phagocytic powers which allow them to englobe and destroy necrotic material. There is a possibility that they may be formed by the fusion of several liver cells surrounding necrotic particles, but the occurrence of isolated multinucleated cells without inclu-

sions indicate that such an explanation is not applicable to all these masses (see Fig. 3).

These cells are entirely different from the multinucleated structures formed by the advancing sprout of a new bile as described by Podwyssozki and have not, as far as I can determine, been previously described. McPhedran and MacCallum¹⁵ in their account of the histology of acute yellow atrophy in man, picture somewhat similar structures, but in their description refer to them as cells of the bile ducts. They also describe both endothelial and hepatic cells containing inclusions, but not the multinucleated type of liver cell about necrotic fragments.

Proliferation of the bile ducts while most evident in the new tissue is seen also in the adjacent normal liver. In the latter location, from the canals of medium size, a solid process of newly-formed cells may not infrequently force its way between the normal liver cells and penetrate the zone of multinucleated cells. Oftentimes these strands, which are never canalized, show a division into terminal sprouts composed of conglomerate masses of cells resembling in a rough way giant cells.

Within the new connective tissue new bile ducts are very numerous. In serial sections these may sometimes be seen to have a connection with normal ducts, but more frequently they have no such connection and appear to be the results of the proliferation of persisting fragments of canals which had escaped the primary necrosis. For the most part they are solid processes with irregular swollen branchings or sprouts. Many of these budding processes have on cross section, as has been noted by Podwyssozki, the appearance of giant cells.

Those which have a distinct lumen are usually widely dilated and are either empty or contain a few leucocytes or desquamated cells. Such are usually irregular and tortuous with one or more solid branching processes. In form and structure the cells of which they are composed are intermediate between the true liver cell and the epithelium of the normal bile duct (see Fig. 4). They are usually irregular, or polyhedral in shape, though often oval but never cylindrical. They have a large amount of protoplasm which tends to stain lightly with eosin and closely resembles that of the liver cell. In the solid masses the protoplasm is not so evident. The nuclei are round or oval and, as a rule, vesicular. That these structures are truly newly-formed is shown

by the presence of mitotic figures which though not numerous may be found without great difficulty. In the older portions of the solid processes, as well as in the distinctly tubular structures, not infrequently may be found single cells much larger than the others and with protoplasm very similar to that of the fully developed liver cell. Similar cells of varying size may also be seen in the adjacent connective tissue either as isolated cells or, more rarely, attached to the new bile duct by a thin thread of protoplasm. Such pictures indicate conclusively that liver cells are formed from these structures. The formation of new liver cells from the terminal budding process I have not observed, though it is very probable, as Podwyssozki states, that they may eventually become isolated and be transformed into liver cells. At the stage here studied such transformation has, however, not been seen.

In addition to these processes, concerning the origin of which from preëxisting bile ducts there can be no question, other cell strands of very similar structure which are formed with equal certainty by a proliferation of liver cells are occasionally seen. These are always connected, with the normal liver substance at the periphery or with small islands of liver cells persisting in the center of the new tissue. They occur as closely massed double rows of cells or as groups of cells, usually with budding processes, but never canalized. The cells of which they are composed are similar to those of the solid processes arising from persisting bile ducts and from such processes they cannot be distinguished in their terminal portions; but upon tracing them to their origin they are found to be connected with true liver cells. The transition of the liver cells is gradual and all stages can be traced (see Fig. 3). The point of most abrupt change is usually at the narrowest part of the strand. That these structures may later become canalized is possible, but it seems more probable that they represent rapidly growing cells which later develop into typical liver cells. Such transformation, however, has not been observed. That these strands are not the result of compression of liver cells is shown by the fact that the most active growth is in the distal portion and in the midst, as a rule, of necrotic cells or newly-formed fibrous tissue. These structures are apparently very similar to those seen by Marchand in acute yellow atrophy of the liver.

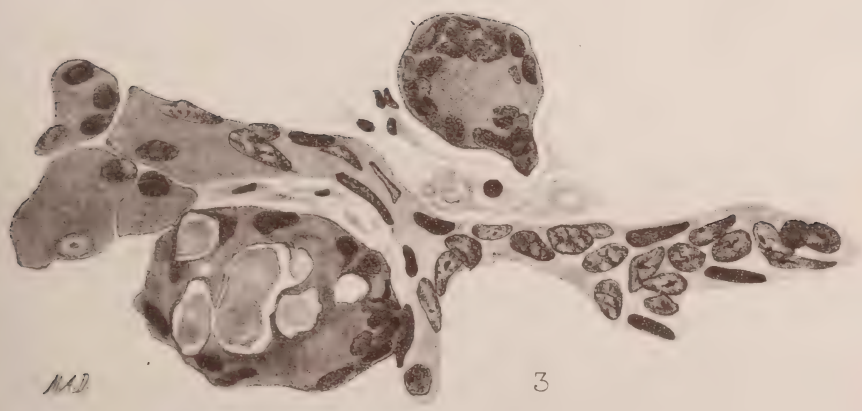
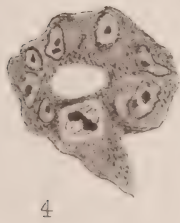
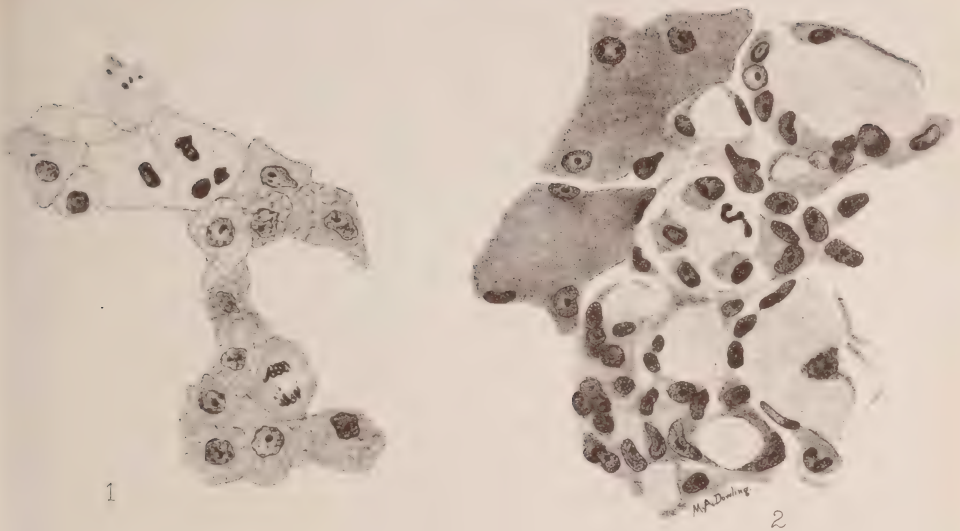
SUMMARY.

In the necroses of the dog's liver, due to the injection of hemagglutinative sera, the first evidence of repair is the occurrence after thirty-eight hours of mitotic figures in the liver cells. At the end of the second day these have greatly increased and a considerable proliferation of endothelial cells has occurred in and about the necrotic areas. These last tend to encapsulate the necrotic cell fragments. From the third to the seventh day these processes advance, and with the formation of a young granulation tissue, the necrotic areas are largely replaced. While there is some evidence that areas of necrosis involving only a few cells may be repaired by proliferation of liver cells, without the formation of connective tissue, in all areas of appreciable size the latter is a prominent feature. Later, however, as the liver cells increase they replace the connective tissue to great extent. The coarser bands, however, remain. Throughout the entire process of repair the great power of the liver cells to increase by indirect division is the most striking feature. In the late stages of the repair of extensive necrosis many multinucleated liver cells, most of which surround fragments of necrotic cells, may be seen between the normal liver and the dense bands of new tissue. Here are seen also numerous giant liver cells without inclusions. New bile ducts formed from the uninjured larger ducts or from persisting fragments of the smaller canals, aid, by a transformation of their cells into liver cells, in the restitution of the liver parenchyma. The formation of new ducts and the transformation of their epithelium into liver cells occurs, however, only when large areas of liver substances are destroyed. Other cell strands, of the general appearance of new bile ducts, are formed to a slight extent by the direct proliferation of liver cells.

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PLATE II.



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EXPLANATION OF PLATE II.

FIG. 1. Mitotic figure in a liver cell in the neighborhood of a necrotic area. Thirty-eight hours. 4 oc., $\frac{1}{2}$ obj., Leitz.

FIG. 2. Edge of necrotic area showing proliferation of endothelial cells and tendency of latter to encapsulate necrotic cell fragments. In the center is a necrotic cell containing a polymorphonuclear leucocyte. Sixty hours. 4 oc., 7 obj., Leitz.

FIG. 3. Solid process of cells formed by proliferation of liver cells and resembling a branching non-canalized newly-formed bile duct. Below is a multinucleated liver cell inclosing necrotic cell fragments; above is a similar giant cell without inclusions. Thirty-six days. 4 oc., 7 obj., Leitz.

FIG. 4. A newly-formed bile duct in which may be seen a mitotic figure and cells of a type intermediate between true liver cells and the epithelium of the normal bile duct. Thirty-six days. 4 oc., $\frac{1}{2}$ obj., Leitz.

LIVER NECROSIS AND VENOUS THROMBOSIS IN HORSES ACTIVELY IMMUNIZED WITH DIPHTHERIA AND TETANUS TOXINS AND WITH STREPTOCOCCI AND THEIR PRODUCTS.*

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PLATE III.

Our search of the literature dealing with the anatomical and histological findings in man or animals dead of diphtheria, tetanus, or streptococcus infections, either natural or artificial, has failed to reveal to us definite records of the conditions similar to those which we are about to describe.†

Law in his extensive work on veterinary medicine gives no descriptions of liver necrosis in the horse exactly comparable to the condition in our series. However, from the statements in his chapter on "Hepatic Hemorrhage and Rupture" we gather the impression that various degenerations of liver cells and subsequent traumatic hemorrhage and rupture of the capsule are far more common in the horse than in man. From his pathological and clinical descriptions the usual cases of hemorrhage and rupture are undoubtedly much milder than those in our horses, as the latter rarely live over ten minutes after the onset of symptoms, while he gives five hours to five days as the period of duration.

Klitine¹ calls attention to fatty degenerations of the liver cells of guinea-pigs, the subjects of chronic experimental diphtheria. Dzierzowsky² also mentions the occurrence of fatty degeneration of the livers of horses which have been used in diphtheria antitoxin production.

*Read at the Sixth Annual Meeting of the American Association of Pathologists and Bacteriologists held at Baltimore May 18, 1906. Published in *Jour. Infect. Diseases*, 1906, iii, 619.

†That liver necroses have been frequently found in horses, the subjects of diphtheria antitoxin production, is no secret to many of those in charge of laboratories where such work is carried on, but no description of this condition has been published as far as we have been able to learn.

¹*Arch. d. Sci. Biol.* (St. Petersburg), 1900, viii, 2.

²*Ibid.* 1902, ix, 293.

Pettit and Girard¹ found complete necrosis of the spleen in a horse used in the production of antiplague serum.

We have to report the finding at autopsy of more or less diffuse necrosis of the liver, or thrombosis of some of the branches of the portal or splenic veins or of the pulmonary artery, either alone or in combination, in twelve horses. These animals had been subjected to repeated subcutaneous injections of the artificially produced toxins of the diphtheria or the tetanus bacillus, or of the various preparations of living or dead cultures, or of suspensions of dysentery bacilli or streptococci. In this series there are seven horses treated with diphtheria toxin, two with tetanus, two with streptococcus, and one with dysentery. A horse treated with diphtheria toxin and killed because of its crippled condition is added to the series for purposes of comparison, as its organs were found to be normal. (See Table I.)

Superficial postmortem examinations were made of the first three diphtheria horses, and incomplete autopsies, in that no special search for thrombosis was made, on the second three horses in the series. (See Table I.)

TABLE I.
SHOWING AUTOPSY FINDINGS RELATING TO NECROSIS AND THROMBOSIS.*

HORSE	SERVICE.				LIVER.		THROMBOSIS OF VEINS.		
	Disease.	Duration Yrs. Mos.	Sudden Death.	Killed.	Necrosis.	Rup- ture.	Liver.	Spleen.	Pul- monary Artery.
11....	Diphtheria	1 11	+		Diffuse	+	?	?	?
17....	"	2 1	+		"	+	?	?	?
28....	"	2	+		"	+	?	?	?
36....	Dysentery..	1 11	+		"	+	?	?	?
37....	Streptococcus	1 9	+		"	+	?	?	?
38....	"	1 9½	+		"	+	?	?	?
21....	Tetanus	3 3	+		"	+	+	+	—
29....	"	3 7	+		"	+	+	—	+
59....	Diphtheria	8		+†	—	—	+	—	—
57....	"	4		+†	—	—	—	—	+
43....	"	2 2	+		Diffuse	+	+	+	—
50....	"	1 7	+		Localized	—	—	—	—
56....	"	1 5		+†	—	—	—	—	—

¹*Compt. rend. de la Soc. de Biol.*, 1905, lviii. 272.

*The horses reported upon in this series include all those which have died, or have been killed, after a year and a half of service under the various treatments, since the observations were started.

†Horses 59 and 57 were killed because they were in such a disturbed state that it was impossible to control them. Horse 56 was hardly able to walk on account of the nearly immovable condition of the joints of its legs, and as its serum was of no value it was killed as a matter of economy. Its tissues were normal.

As we have not been fortunate enough to be present when any of the horses died from the effects of hemorrhage and rupture of the liver, we are unable to give a detailed clinical picture of the symptoms preceding death in these cases. The general conditions as described by an attendant are as follows: The animal are apparently in their usual condition. They may have recently eaten a normal meal. Attention is first attracted to them by a rapid noisy breathing. The animal exhibits signs of collapse, and shortly falls to the floor. The breathing becomes very labored and the animal struggles. This stage is followed by a rapid and progressive loss of power, and death ensues. The whole course may not last over ten minutes.

At autopsy the peritoneal cavity contains a very large amount of fluid blood or serum and clots. The liver is usually very soft and friable, and is handled with difficulty. The capsule presents one or more ruptures, and at such places the liver substance is broken up into stringy fragments, interspersed with blood clots. (See Figure 1.)

Our attention was first called to the occurrence of thrombosis in association with diffuse necrosis of the liver by the findings at the autopsy of Horse 21, which occurred April 9, 1905. As is shown in Table 1, this animal had been in active service for the production of tetanus antitoxin for a period of over three years, and was in apparent excellent physical condition when she died in the manner already described. As the protocol of this animal gives a fairly representative picture of the conditions found in the other horses in the series, it will be given in full.

On opening the abdomen a large amount of bloody fluid escapes and many light red clots. The intestines are distended. The glands of the mesentery in the ileocolic region are enlarged and soft. The liver for the most part presents a yellowish-gray color; within the right lobe an encapsulated hemorrhagic mass. On section it is found that the entire liver is necrotic, presenting a grayish color and a consistence resembling that of thick oatmeal. In some places there is added to this the yellowish tinge of bile. The hemorrhage in the right lobe is found to be sub-capsular and infiltrates the liver substance. It is essentially a hematoma beneath the capsule. No remnant of normal liver can be made out. Everywhere with slight pressure the liver substance can be removed leaving only the connective tissue framework.

The portal veins at their entrance to the liver are everywhere filled with smooth, firm, yellowish-white clots but slightly streaked with red. (See Fig. 2.) These clots project into all the smaller branches and are definitely adherent to the vessel wall. In most instances they completely

PLATE III.

To Illustrate Drs. Pease and Pearce's Article on "Liver Necrosis and Venous Thrombosis in Horses."

Albany Medical Annals, January, 1907.

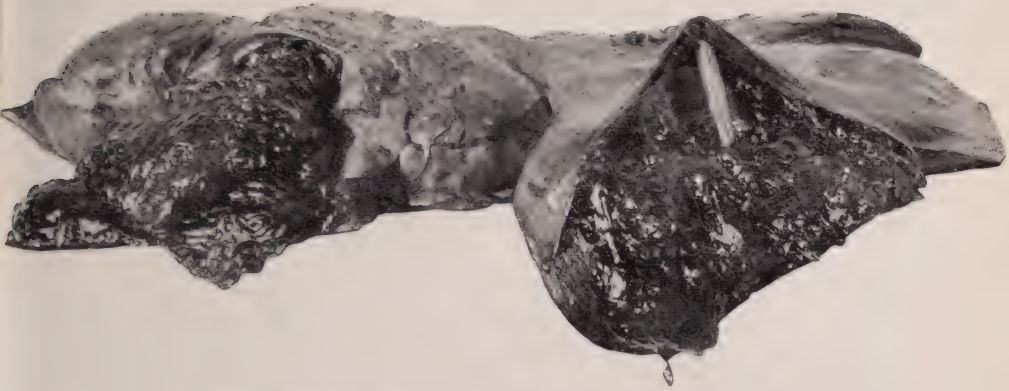


FIG. 1.—Necrosis, Hemorrhage, and Rupture of Liver. Horse 43.



FIG. 2.—Thrombosis of Portal Vein. Horse 21.

occlude the vessels in which they lie. On section through the liver small, firm, yellow, rigid clots protrude from the surface. The hepatic artery is free as are also the aorta and vena cava.

The spleen shows slight thickening of the capsule, and on section are found here and there a few soft swollen areas of a darker red than the surrounding tissue and in the center of each a clot similar to those found in the liver. On dissecting the main branch of the splenic vein an adherent thrombus can be followed for some distance. The splenic artery is free.

There is no accumulation of fluid in either pleural or pericardial cavity. The heart is pale, but otherwise negative. The lungs are pale and neither congested nor edematous. There are no thrombi in the pulmonary, coronary, or other vessels of the thorax. The kidneys are pale and cloudy. The adrenals are swollen and soft.

Careful examination of the vascular system shows no thrombi in vessels other than those of liver and spleen.

Anatomical diagnosis.—Widespread necrosis of liver. Hematoma of the liver. Focal hemorrhages in the spleen. Hemoperitoneum. Thrombosis of the portal and splenic veins.

Histology. Liver.—Sections taken at random from different portions of the liver show practically complete necrosis without leucocytic infiltration. Here and there the nuclei in small portions of a lobule may be distinguished, as may also those of the structures in the larger portal spaces, but otherwise the destruction is complete. Much bile pigment is present in the necrotic cells.

Sections passing through the periphery of the hematoma in the right lobe show this mass to be surrounded by a definite fibrous capsule from which prolongations pass into the adjacent necrotic tissue. In this fibrous tissue is a diffuse deposition of old blood pigment.

Other sections show loose granulation tissue penetrating and replacing the blood clot. Here and there in the older portions are newly formed bile ducts and liver cells, the latter being large, pale, and multinucleated.

Sections through five thrombi differing in size show a uniform structure—a definite network of fibrin enmeshing large numbers of leucocytes. At the periphery the fibrin is compact and hyalin, forming broad bands. Small bands of similar hyalin are found also in the other portions. Only an occasional red corpuscle is seen.

Spleen.—Section through the occluded vein shows a thrombus, similar in structure to those found in the liver and intimately adherent to the vessel wall, which is greatly thinned and infiltrated with lymphoid cells. In the tissues about the vessels a diffuse hemorrhage has occurred. Elsewhere the spleen is normal.

Lymph nodes.—The sinuses are dilated and closely packed with large, pale, endothelial cells. These are but slightly phagocytic. In the lymph nodes are many plasma cells, with, however, no diminution of the lymphoid cells. Throughout the lymphoid tissue is an abundant deposition of old blood pigment.

Adrenal.—Normal.

Lung.—Congestion, moderate edema in focal areas and slight thickening of walls of alveoli.

Kidney.—Cloudy swelling of epithelium of tubules, few foci of lymphoid cell infiltration.

Heart muscle.—Cloudy swelling.

Histological diagnosis.—Necrosis of liver with repair about hematoma. Mixed thrombi of portal vessels. Thrombosis of splenic veins with perivascular hemorrhage. Endothelial hyperplasia of lymph nodes with deposition of old blood pigment. Congestion and edema of lung. Cloudy swelling of heart and kidney.

ABSTRACTS FROM CLINICAL HISTORIES AND PROTOCOL.

HORSE 11.—*Clinical notes*.—Horse about 10 years old. Used in the diphtheria service. Had stiff leg joints at time of entering, which gradually became worse until horse was almost constantly confined to its stall.

The maximum antitoxin strength of its serum was approximately 500 units per c.c. During the last six months of its life the horse showed progressive emaciation. After a year and 11 months of treatment the horse suddenly developed the usual symptoms of hepatic rupture, and died in a few minutes.

Autopsy notes.—A superficial examination shows diffuse necrosis and hemorrhage of the liver, with rupture of the capsule and consequent hemoperitoneum.

HORSE 17.—*Clinical notes*.—Sound horse of uncertain age. Diphtheria service. Always remained well and active during period of treatment of two years and one month. Antitoxic strength of serum varied from 200 to 400 units per c.c.

The animal retained its usual weight until death, which occurred suddenly after the development of the usual symptoms of hepatic rupture.

Autopsy notes.—Examination incomplete. Diffuse necrosis of the liver with hemorrhage, rupture, and hemoperitoneum.

HORSE 28.—*Clinical notes*.—Sound horse about 12 years old. Diphtheria service. Active during entire period of treatment of two years. Maximum antitoxic strength of serum 400 units per c.c. Gradual loss of flesh during last two months of life. Had frequent abscesses at the sites of injection with accompanying high temperatures. Died during the night.

Autopsy notes.—Examination incomplete. Diffuse necrosis of the liver, with hemorrhage, rupture, and hemoperitoneum.

HORSE 36.—*Clinical notes*.—Sound horse about 10 years of age. Dysentery service. Progressively increasing doses of autolyzed suspensions of surface growth of agar cultures of two strains of *B. dysenteriae* were injected alternately into this horse. They produced very severe reactions, during which the temperature would often rise to 104° F., or over, and the site of the injection would become very much swollen and painful, and the animal would refuse to eat for several days.

After a total of 496 c.c. of these autolyzed suspensions of dysentery bacilli had been administered, living broth cultures of the same strains were administered. They caused much less vigorous systematic reactions.

About seven weeks before death the animal developed a severe diarrhea, which was checked with difficulty. It also began to lose weight, and finally became much emaciated. The animal was found dead early in the morning.

Autopsy notes.—Diffuse necrosis of the liver with hemorrhage, rupture, and hemoperitoneum. Other organs, including intestinal mucous membrane, normal microscopically. Cultures from the usual organs were negative. No thrombosis was noted in any of the vessels of the liver, spleen, or lungs, but attention was not directed particularly toward this point.

Histological diagnosis.—Intense diffuse granular degeneration with irregular focal areas of necrosis in the liver.

HORSE 37.—*Clinical notes.*—Sound, active horse of about 12 years of age. Streptococcus service. Received, in gradually increased doses, a total of about three and a half liters of autolyzed salt solution suspensions of a rabbit-virulent streptococcus, grown on the surface of large agar plates, and later about half a liter of broth cultures of the same streptococcus. Small subcutaneous abscesses followed the later injections. The animal retained its weight and activity during the treatment. It was found dead one morning.

Autopsy notes.—Diffuse necrosis of the liver with hemorrhage, rupture, and hemoperitoneum.

HORSE 38.—*Clinical notes.*—Streptococcus service. Age uncertain, but animal appeared to be at least 20 years old. Had somewhat crippled legs. Became emaciated during the last two months of life. The treatment was the same as was given Horse 37 and was started at the same time, except that another streptococcus was used. This animal also died during the night, about two weeks after the death of Horse 37, and the autopsy findings were in general the same as those of that animal.

HORSE 21.—*Clinical notes.*—Sound active mare about 16 years old. Tetanus service. Always well. Remained active and retained its weight during life. She died in the manner already described. (Full protocol will be found in the text.)

HORSE 29.—*Clinical notes.*—Sound active horse about 10 years of age. Tetanus service. Remained well until about two months before death, when it had frequent rises of temperature and difficulty of breathing which were directly due to the toxin injections. During the last half-year had frequent acute abscesses at sites of injection. This horse died in the manner already described.

Autopsy notes, anatomical diagnosis.—Diffuse necrosis of the liver with subcapsular hemorrhages and rupture. Hemoperitoneum. Multiple thrombi of portal veins. Multiple thrombi of pulmonary arteries. Multiple infarcts of the lungs. General lymphatic hyperplasia.

Histological diagnosis.—Necrosis, congestion, and hemorrhage of the liver. Thrombosis of portal veins and pulmonary arteries. Focal edema and congestion of the lungs with slight leucocytic exudate. Acute endothelial hyperplasia of the lymph nodes. Congestion of the spleen. Acute interstitial (non-suppurative) nephritis. Tests of liver and kidneys for amyloid changes were negative.

HORSE 59.—*Clinical notes.*—Diphtheria service. Sound active horse about 10 years old. After eight months of treatment was taken suddenly while in the paddock with difficulty of breathing and evident distress. Respiration became very rapid and labored, and at the same time there was very marked spasmodic tenesmus, but no dung was passed. Pulse rate about 90. The horse became weaker as the above condition continued, and finally was unable to stand, and when down struggled violently, so that it became necessary to kill him about five hours after the onset of the symptoms. The maximum antitoxic strength of the serum was 300 units. The last bleeding occurred about 10 days prior to death.

Autopsy notes, anatomical diagnosis.—Thrombosis of portal veins. Focal hemorrhages of liver and spleen.

Histological diagnosis.—Granular degeneration and focal hemorrhages of liver. Leucocytosis.

HORSE 57.—*Clinical notes.*—Diphtheria service. Sound horse 10 years old. This animal had lived under the same conditions as the other horses in the service for 10 months before the treatment was begun. The toxin injections were pushed with considerable vigor, so that during the four months of treatment he received 14 injections, and had an average of nearly 3.9 days of temperature over 101° F. for each injection given, which is the maximum for any of the horses in this series. The animal appeared to stand them satisfactorily, and gave a serum of 300 units per c.c. at the second bleeding. Immediately after the third withdrawal of eight liters of blood the animal suddenly fell to the floor in a state of collapse. Nothing was thought of this, as it is not an uncommon occurrence when larger amounts of blood are withdrawn. The horse did not attempt to rise later on, and all efforts to stimulate the animal with strychnin, etc., and to support him in slings, were futile. That night and the following day he struggled violently, and could not be quieted with full doses of morphine or chloral. The next night, and also part of the following day, he rested comfortably. Later he again became violent, and as the temperature rose to 106, and as it seemed impossible to control him, he was killed in the evening. His head and shoulders were badly bruised, and as the autopsy was not performed until the next morning, the tissues and organs showed a well-developed gas bacillus infection at that time.

Autopsy notes, anatomical diagnosis.—Acute endarteritis and thrombus formation in the main trunk of the pulmonary artery. Thrombosis of intrapulmonary branch of left pulmonary artery. Atelectasis of portion of left lung. Hemorrhagic infarct of left lung. Cloudy swelling of the myocardium. Fatty transformation of the liver with evidences of gas bacillus infection. No hemorrhage or other evidence of antemortem necrosis was apparent.

Histology.—Complete postmortem decomposition with gas blebs in the liver and lungs. Tests for amyloid changes in all organs were negative.

HORSE 43.—*Clinical notes.*—Diphtheria service. Sound horse about 10 years old. Remained well and active during treatment for two years and two months. During the last few months of life was subject to abscess formation at sites of injection. Its serum showed 500 units per c. c. after

three months of treatment, and varied from that point to 700 units during the next year, after which time it varied from 300 to 500 units, until three months before death it dropped suddenly to below 200 units. Death occurred in the manner already described.

Autopsy notes, anatomical diagnosis.—Extensive necrosis of the liver with multiple hemorrhages. (See Fig. 1.) Thrombosis of small branch of the portal vein in the right lobe. Rupture of encapsulated hemorrhages in the peritoneum. Hemoperitoneum. Thrombosis of the splenic veins. Hemorrhage and edema of gastrohepatic lymph nodes. Chronic peritonitis.

Histological diagnosis.—Necrosis and amyloid degeneration of the liver, with moderate regeneration. Chronic hemorrhagic cysts of the liver. Organizing thrombi of portal and splenic veins. Amyloid degeneration of Malpighian bodies of spleen. Proliferation of intima of splenic arteries. Hemorrhage and endothelial hyperplasia of gastrohepatic lymph nodes.

HORSE 50.—*Clinical notes.*—Diphtheria service. Horse of uncertain age, of good condition on entering. Gradually became almost helpless through stiffness of joints and blindness. Had frequent abscess formations at sites of injections. Antitoxic strength of serum never over 300 units c.c., and usually from 200 to 250 units. Was found dead one morning, and stall showed evidences of continued struggling. The front of the stall was covered with frothy mucus. The coughing up of this material has never been observed in the horses dying from rupture of the liver.

Autopsy notes, anatomical diagnosis.—Necrosis and hemorrhage of left lobe of the liver. Congestion of lungs and the right lobe of the liver. General lymphatic hyperplasia. Abscess of subcutaneous tissues of back. Cloudy swelling of heart and kidneys. Acute endarteritis of left renal artery. Thickening of intima of splenic artery. Focal lesions of adrenals. Chronic peritonitis.

Histological diagnosis.—Congestion, edema, hemorrhage, amyloid degeneration, and necrosis of the liver. Chronic interstitial myocarditis. Subpericardial hemorrhage with hyalin degeneration of muscle fibers, and leucocytic infiltration. Edema and congestion of lungs with hemorrhages. Edema and hemorrhages of lymph nodes. Amyloid transformation of Malpighian bodies of the spleen. Localized endarteritis and mesarteritis of left renal artery.

HORSE 56.—*Clinical notes.*—Diphtheria service. Horse about nine years old on entering. Developed stiffness of joints and became badly crippled. Antitoxic strength of its serum was rarely up to 300 units per c.c., and usually showed but 200 units. After a year and five months of treatment the animal was killed.

Autopsy notes.—Macroscopically and microscopically the liver, spleen, kidney, pancreas, adrenals, lymph nodes, lungs, and heart muscle appeared to be normal.

Table 1 presents a summary of the findings relating to necrosis of the liver and thrombosis in twelve horses which have presented such changes, and also gives those of one horse in whom all the organs were normal, although it had been subjected to active

treatment with diphtheria toxin for a period of a year and five months. The other changes found in the tissues of these twelve horses varied to some extent, but such changes did not differ greatly from those to be found in the tissues of fatal cases of diphtheria in man, such as endothelial hyperplasia of lymph nodes, and cloudy swelling of kidney epithelium and heart muscle, etc.

One or two unusual findings were, however, observed. In Horses 43 and 50, belonging to the diphtheria service, amyloid changes were observed in both liver and spleen, and especially in the latter, but were not present in the kidney, heart muscle, or lymph nodes. These animals had developed an unusual number of subcutaneous abscesses at the sites of the toxin injections during the later months of their lives.

In the liver in tetanus horse 21 around the margin of a subcapsular hematoma, and in the necrotic liver of diphtheria horse 43 about the larger portal spaces were found evidences of attempted regeneration in the way of newly formed false bile ducts, and, especially in the latter horse, of columns of newly formed liver cells. In the necrotic livers of the other horses there were no evidences of repair. Also in the tetanus horse 29 there were evidences of beginning interstitial nephritis, of the acute non-suppurative type found in diphtheria of man, accompanying widespread disintegration of the epithelium of convoluted tubules.

A study of Table I will show that horses presenting necrosis of the liver did not, in all cases, show thrombosis in any organ, nor in animals presenting both conditions was the thrombosis in the hepatic veins always as extensive in its distribution as the necrosis. On the other hand, two diphtheria horses presented thrombosis without evidences of liver necrosis. Unless, therefore, the thrombosis in some instances is secondary and dependent upon the necrosis, and in other cases upon other conditions, we cannot attach much significance to their fairly close association.

That the necrosis is not usually of sudden or rapid development is shown by the fact that the livers of two horses, tetanus horse 21 and diphtheria horse 43, presented encapsulated hematomas of various sizes scattered throughout the liver substance. The thickness of the capsules and the character of their contents indicated their formation at least several months prior to death,

which in turn demonstrated the still earlier existence of extensive necrosis.

With the object of ascertaining whether there existed any common factor in the clinical histories of these horses which might assist in arriving at either the etiology of the liver necrosis or the thrombosis, or of both, the individual factors in the history of each horse which has died since these conditions were noted, have been worked out and are compared in Tables 1, 2, 3 and 4.

It is evident from the fact that some horses in the diphtheria, tetanus, streptococcus, and dysentery services presented diffuse necrosis of the liver, that this condition is not due to any special pathogenic property of any one of the organisms used in the immunizations. If, however, it is the result of the activity of some bacterial property, it is not necessary to suppose that the agent in all cases belongs to either the soluble toxins or the so-called bacterial endotoxins, for the reason that the tetanus horses received only toxin which had been filtered through Pasteur-Chamberlain filters, and consequently no bacterial bodies were injected; and, on the other hand, the streptococcus horses which received large amounts of dead cultures were equally affected.

It hardly seems probable that any of the constituents of the various media used in the preparation of the toxins and toxic products, such as the meat extractives, peptone, etc., could be the causative agent of the liver necrosis, for the reason that the two horses of the streptococcus service (37 and 38) received only about 500 c.c. of broth containing such materials during a period of about one and three-quarters years, the other later injections consisting of suspensions of bacteria or their bodies in physiological salt solution. (See Table 2.)

Neither can any effect produced by the repeated abstraction of blood from such horses be the main cause of the liver necrosis, for, as is seen in Table 2, Horse 36 in the dysentery service was bled only one liter on a single occasion, and the streptococcus horses 37 and 38 had bled eight liters, abstracted on only six and seven occasions respectively during a period of a year and three-quarters. On the other hand, Horse 56 of the diphtheria service was bled eight liters on 18 occasions during a period of a year and a half, and at death its liver was absolutely normal.

It is likewise possible to exclude the antiseptics used in the preservation of the bacterial toxic agents as an important factor in the production of liver necrosis, although nearly all the toxic

materials administered contained from 0.3 to 0.5 per cent of either carbolic acid or trikresol. A study of Table 2 will show that the actual amounts of these antiseptics received by the different horses varied from about 2.5 c.c. during 11 months in the case of dysentery horse 36, and about 17 and 19 c.c. in the streptococcus horses 37 and 38 respectively, to 165 and 235 c.c. in the tetanus horses 21 and 29 respectively, and from 190 to 385 c.c. in the various diphtheria horses presenting necrosis of the liver. In other words, the horses receiving the larger amounts of antiseptics lived the longer periods.

Nor could we explain the necrosis of the liver by any general disturbance of metabolism due to the injections of the bacterial

TABLE 2.
SHOWING RELATION OF THE MATERIALS INJECTED AND OF REPEATED BLEEDINGS TO LIVER NECROSIS.

HORSE.	Toxic Broth Injected.	Autolyzed or Dead Bacterial Suspensions.	Amount Carbolic Acid Injected.	Number of Bleedings (8 Liters Each).	Con- dition at Death.	Extent of Necro- sis.
11.....	42 liters		210± c.c.	21	Poor	Extensive
17.....	59 "		295±	25	Good	"
28.....	38 "		190±	20	Poor	"
36.....		800 c. c.	2½	0	"	"
37.....		4 liters	17±	6	Good	"
38.....		4½ "	10±	7	Poor	"
21.....	63 liters		165±	29	Good	"
29.....	78 "		235±	35	"	"
43.....	77 "		385±	25	"	"
50.....	50 "		250±	18	Poor	Left lobe.
56.....	33 "		165±	18	"	No necrosis

toxic agents, for some of the animals which showed the most diffuse necrosis were to all outward appearances and according to their weight in excellent physical condition, as is indicated in Table 2.

There is also no apparent reason for believing that the conditions under which such horses are kept in antitoxin stables is the main factor in the causation of the necrosis. Diphtheria horse 56 was kept under the same conditions as the others for a period of a year and a half, and at autopsy the liver was normal.

A careful study of the temperature charts and a knowledge of the manner in which the horses withstood the injections will, perhaps, give as likely an explanation of the causation of the necrosis as can be found. In Table 3 will be found the number of days during the treatment of each horse, in which the temperature

stood at the various points from 101° to $105^{\circ}+$ Fahrenheit. It will be seen that a fair degree of uniformity exists in this number of days of fever in the animals which had necrosis of the liver. These increases of temperature cannot be accepted, however, as an exact index of the character of the reaction, as some horses commonly have considerable fever without any other manifestation of serious disturbance after toxin injections. However, the variations in the temperature curves are due largely to the type of immunization. Thus the dysentery horse had apparently fewer days of temperature than those used in the diphtheria work, but he lived under the treatment only about one-half as long as the latter. It is well known that horses are particularly

TABLE 3.

SHOWING RELATION OF REACTIONS DUE TO TOXINS INJECTED TO LIVER NECROSIS.

HORSE.	Disease.	Duration of Treatment.		Number Injections.	DAYS OF TEMP. OVER 101° FAHR.					Average Days of Temperature for each Injection.
					101 to 102	102 to 103	103 to 104	104 to 105	Total.	
		Yrs.	Mos.							
11.....	Diphtheria	1	11	75	95	73	14	1	183	2.4
17.....	"	2	1	77	85	75	22	2	184	2.4
28.....	"	2		60	92	74	38	0	213	3.1
36.....	Dysentery		11	46	86	62	14	4	160	3.6
37.....	Streptococcus	1	9	54	76	44	19	2	141	2.6
38.....	"	1	9½	60	68	48	5	1	152	2.5
21.....	Tetanus	3	3	126	95	69	9	1	174	1.4
29.....	"	3	7	138	135	53	8	2	198	1.4
43.....	Diphtheria	2	2	77	92	65	31	3	191	2.2
50.....	"	1	7	64	79	39	20	0	138	2.1
56*.....	"	1	5	59	63	57	34	2	146	2.4

susceptible to injections of cultures of true or paradyntery bacilli; and this horse withstood the injections very poorly. On the other hand, the horses treated with injections of even large doses of tetanus toxin show only slight disturbances, and in harmony with this is the long duration of the period of treatment in horses 21 and 29, each of which lived considerably over three years. The two streptococcus horses withstood the injections about as well as the diphtheria animals. Each lived approximately a year and three-quarters, and that was nearly the average life, a year and eleven months, of the five diphtheria horses.

As the horses used in each service lived approximately the

*No liver necrosis in this horse.

same length of time under their respective treatments, and as the animals receiving the injections of the toxins causing the milder reactions lived for considerably longer periods than did those receiving toxins producing the most violent reactions, and as we have excluded other possible factors, we are led to the conclusion that the liver necrosis is, without much doubt, mainly the effect of the administration of repeated doses of the bacterial products.

That some of the other factors which appear to be excluded by our findings may be contributory to the main causative agent in some instances cannot be denied.

A possible relationship between the effect of the toxic products of these bacteria on the liver cells and the production of antitoxic or other anti-bodies is not capable of either positive or negative determination from the available data.

In the diphtheria and tetanus horses under consideration no relationship can be made out between the course of the necrotic changes in the liver and the well-known progressive decrease in the antitoxic strength of the sera of some horses after prolonged treatment. Thus diphtheria horse 50, which had necrosis of the liver, gave an antitoxin of from 300 to 350 units per cubic centimeter in only two early bleedings out of a total of 15, the others producing sera of from 200 to 250 units. On the other hand Horse 56, which showed a normal liver when killed after an immunization life of one year and five months, gave almost identically the same grades of serum in seventeen bleedings. That is, the early bleedings gave sera of 400 units, and those subsequently from 300 down to 200 units, which was the strength at the time the animal was killed. These findings would seem to indicate that the customary decrease in antitoxic power, which occurs in the sera of many horses as their immunization proceeds after the first few months, is not exclusively due to a progressive liver necrosis. However, the amount of data obtained does not permit us to draw any conclusions concerning the possible relation of the liver to antitoxin production. The bleedings are too infrequent, and the continuation of the antitoxic power of the serum is probably dependent upon so many factors that the absence of liver necrosis in one horse whose serum had shown the usual progressive loss of power, is entirely insufficient evidence to warrant the exclusion of the liver as a factor in antitoxin production.

Brunton and Bokenham¹ have endeavored to show that the liver is capable of producing diphtheria antitoxin by the action of toxin passed through the portal venous system. While it might be questioned whether they have clearly proven the formation of true antitoxin, they undoubtedly showed that the liver cells have an affinity for pure diphtheria toxin, and are capable of at least greatly reducing the poisonous power of the crude product.

A similar affinity of the liver cells of some invertebrates for tetanus toxin has been claimed by Metchnikoff.² He states that in scorpions injected with tetanus toxin the liver is the only organ which absorbs and retains the toxin.

If the liver is capable of absorbing large amounts of the toxic bacterial products, and if their direct action on it is the means of producing liver necrosis, then in most horses treated with such agents the liver is very probably capable of disposing of large amounts of these products without injury; for the liver necrosis is not present in many horses, at least, which have come to autopsy after injections of considerable amounts of diphtheria toxin distributed over several months. (See history of Horse 56.)

In view of recent work on autolysis of liver tissues *in vitro*, it may not be out of place to consider the possibility that this late necrosis is due to alterations or disturbances of those factors which prevent the action of the autolytic ferments normally present in the liver.

Baer and Loeb³ have shown that weak alkalis retard and weak acids stimulate the autolytic ferments in the liver, and that the elements in normal serum which strongly retard or prevent autolysis are the serum albumin and the fibrinogen, while the serum globulin has the opposite effect, namely, a strong stimulating action on the autolytic ferment.

Hiss and Atkinson,⁴ Butjagin,⁵ and others claim that an increase in the globulin content of the blood occurs during active immunization, although this is disputed by Müller.⁶

Butjagin also demonstrated a gradual decline in the alkalinity of the blood during the later part of the period of immunization.

¹ *Jour. Path. and Bact.*, 1904, x, 50.

² *L'Immunité*, etc., Paris, 1901, p. 343.

³ *Arch. f. exper. Path. u. Phar.*, 1905, liii, 1.

⁴ *Jour. Exper. Med.*, 1900, v, 47.

⁵ *Hyg. Rund.*, 1902, xii, 1103.

⁶ *Beiträge z. chem. Physiol. u. Path.*, 1905, vi, 454.

In view of the work of Baer and Loeb, the occurrence of these or other similar blood changes may have some relations to the development of the liver necrosis or autolysis.

THROMBOSIS.

Of the horses upon which careful autopsies were performed and which presented necroses of the liver, extensive coexisting thrombosis of the veins of that organ was found in one (Horse 21), and to a lesser extent in two others (29 and 43). In the horses treated with streptococcal and dysenteric bacterial products, no careful searches of the entire substance of their livers with this point in view were made.

In one diphtheria (43) and in one tetanus (21) horse the veins of the spleen were likewise the seat of thrombosis to a greater or less extent. The other tetanus horse (29) had extensive thrombosis of the pulmonary arteries and infarction of the lungs.

As has been stated, two diphtheria horses had thrombosis occurring without necrotic changes in the liver. In one (59) the thrombosis was confined to three large branches of the portal vein in the liver, while in the other (57) the thrombosis was present in the main branch of the pulmonary artery and in the intrapulmonary branch of the left pulmonary artery. In the latter horse the clinical manifestations arose immediately after a withdrawal of the usual eight liters of blood, and may have been due to the formation of a blood clot at the site of this operation and the detachment and passage of the clot into the venous circulation. The thrombus in the main pulmonary artery was in the form of a pedunculated vegetation about the size of a walnut. The horse apparently suffered considerable thoracic pain, and was so weak as to be unable to stand even with the assistance of slings.

The other horse (59) with localized thrombosis of the portal veins gave indications of great pain in the abdominal cavity, with tenesmus, and also complete prostration and excessively rapid respiration and a high pulse rate. After the continuation of these symptoms for about five hours the animal was killed, and the autopsy performed immediately.

If the conditions operating to produce the thrombosis in this case are the same as in those where the thrombosis coexisted with liver necrosis, it is remarkable that it should have occurred as early as the eighth month of the immunization period, and

that the clinical symptoms should be so much more severe than in those cases where thrombosis occurred later and more extensively.

In looking for some factor or condition operative during the period of treatment which might be considered as of etiological significance for the thrombosis, we are not afforded as much data as we would like, owing to the failure to examine and note particularly the presence or absence of thrombi in the first few animals which died from rupture of the liver with hemorrhage. Thus we have no definite information on this point in three diphtheria, one dysentery, and two streptococcus horses.

From the data tabulated in Table 4 it can be seen that by excluding the horses with early thrombosis the treatment given and its effects on the three remaining horses are quite similar. The

TABLE 4.
RELATION OF THE TREATMENT OF HORSES TO THE DEVELOPMENT OF THROMBOSIS.

NUMBER.	Diseases.	Immunization Period.	Liters of Broth Injected.	Amount of Carbolic Acid Injected.	Days of Tem. over 101°	Number Bleedings of 8 Liters Each.
50.....	Diphtheria	8 mos.	16½	82±c.c.	91	7
57.....	"	4 "	5½	27±	54	43
31.....	Tetanus	3 yrs. 3 "	63	165±	174	20
20.....	"	3 " 7 "	78	235±	198	53
43.....	Diphtheria	2 " 2 "	77	385±	191	25

only exception is to be found in a considerable difference in the amounts of carbolic acid or trikresol which the horses received with the toxins injected. We are of the opinion that these antiseptics played no essential part in the production of the conditions favoring thrombosis.

We cannot, however, readily exclude in this way a possible influence favoring thrombosis by the injection of those elements which make up the broth used for toxin production, such as peptone, meat extractives, etc. Likewise we cannot exclude the effects of the repeated abstraction of eight liters of blood every three or four weeks. We are unable, therefore, by any process of exclusion to form any definite opinion of the part played in the thrombosis by the pathogenic activity of the bacterial toxins injected into these horses.

If, however, we ascribe to the early thromboses the same etiological conditions as bring about the late thromboses, then we

can find no common factor in the treatment of our horses which might have been operative in the determination of this condition.

There are, however, some noteworthy features in the relation of thrombosis to the liver necrosis in some of the horses.

Thus in Horse 50, which was the only animal with necrosis of the liver which was thoroughly examined for thrombi and none found, the necrosis and hemorrhage of the liver was not general but localized almost exclusively in the left lobe, and was evidently not so far advanced as in the other animals. As the autopsy also revealed myocarditis with small subpericardial hemorrhages, and amyloid degeneration of the liver and spleen, local endarteritis, edema, and congestion of the lungs with small hemorrhages, it is not unlikely that the animal did not die from the effects of the liver necrosis, especially as there was no rupture of that organ. It is not improbable, therefore, that thrombosis would also have occurred in this horse if he had lived longer.

In Horse 29 the portal veins in which thrombi were found corresponded closely with the areas of necrosis in the liver, and it was noted that the thrombosis seemed to proceed from the smaller veins outward into the larger branches, ending there in large, round-ended clots.

In Horse 43 the extensively necrotic liver showed thrombosis only in one small portion of the right lobe, but considerable thrombosis occurred in the spleen.

Thus, taking the findings as a whole, it can be stated that while all necrotic areas in the liver did not have coexisting thrombosis, there were no thrombi in the portal veins other than in the necrotic portions, except in the two horses already described which died with early thrombosis without necrosis. It is possible, therefore, that in some animals, at least, the portal thrombosis may be caused by lesions of the vessel walls secondary to the liver necrosis.

It is the opinion of Smith¹ that the pathological effects of the periodic losses of blood in antitoxin horses lead in certain cases to serious derangements and death. He shows that in many horses which have been bled five liters every three or four weeks for periods of from nine months to over four years, the red blood corpuscles have a reduced osmotic tension. He believes that this condition is due to the repeated bleedings and not to the toxin injections.

¹ *Jour. Med. Res.* 1904, xii, 385.

In Pettit and Girard's case of necrosis of the spleen in an anti-plague horse, the authors express the qualified opinion that the necrosis was not due to the periodic bleedings.

In so far as necrosis of the liver is concerned, our data do not warrant the conclusion that the periodic bleedings have any special etiological relation to it. If, therefore, the lowered osmotic tension is due to the repeated losses of blood, it is not probable that such lowered tension is in any way responsible for the liver necrosis. Whether it is or is not a factor in the causation of the thrombosis we are not prepared to state.

Butjagin has shown the presence of this phenomenon and also the existence of such alterations in the blood serum as an increase in the specific gravity, changes in albumin and globulin content, electrical conductivity, alkalinity, and refractive index during the immunizing process.

Similar work on one or more of these aspects of the subject has been reported by Müller¹ and others.

What relation exists between these alterations in the morphological, chemical, and physical conditions of the blood constituents and the pathological conditions noted by us, remains to be solved.

SUMMARY.

In a series of twelve horses, actively immunized with the products of certain pathogenic microorganisms, autopsies revealed widespread liver necrosis in nine, and localized liver necrosis in one.

Thrombosis of the portal veins was present in three, of the splenic vein in two, and of branches of the pulmonary artery in one, of the nine horses showing widespread necrosis. One horse had thrombosis of branches of the portal veins and another of the pulmonary artery without liver necrosis. Six horses were not carefully examined for thrombosis.

The evidence obtained tends to exclude the materials such as peptone, beef extractives, and antiseptics, such as carbolic acid, injected with the toxins, and also the repeated bleedings practiced, from any important rôle in the production of the liver necrosis. On the other hand, the evidence leads to the conclusion that the toxic bacterial products injected are directly or indirectly responsible for the production of this pathological condition.

¹ *Loc. cit.*

The evidence is not sufficient to determine which, if any, of these factors is responsible for the occurrence of the venous thrombosis. A possible etiological action by the antiseptics injected is excluded. In some cases the portal thrombosis may result from the liver necrosis.

NOTE.—Since this paper went to press another horse (No. 60) has died after a year and four months of treatment. During the first four months of this period it received diphtheria toxin, and after that until death small doses of tetanus toxin. The horse had a very slightly varying temperature of from 104° to 106° during the two weeks prior to death, and gradually became weaker during the last few days of life, and died during the night. Just prior to the onset of the high temperature an edematous condition of the genital sheath developed, followed by a tremendous increase in the size of the penis, apparently due to venous stasis. Later the use of the left hind leg became impaired.

At autopsy thrombosis of the left iliac vein, the inferior vena cava, the veins of the tissues about the penis, the splenic vein outside the spleen, the portal vein, and some of its branches in the liver, and of some of the pulmonary arteries was found. There was no evidence of necrosis in the liver. There was a general hyperplasia of the lymph nodes.

AFFECTIONS OF THE THYROID GLAND:

A CLINICAL AND PATHOLOGICAL STUDY.*

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(From the Bender Laboratory, Albany, N. Y.)

PLATES IV, V, AND VI.

During the past few years as a result of the great advances in surgery of the thyroid gland, the study of the many diseases of this organ has been placed upon an intelligent clinical and pathologic basis. There still remains, however, a lack of uniformity not only in the classification of the various lesions but also in the interpretation of their etiology and their pathologic significance. It was with the object of adding, if possible, to our orderly knowledge of the pathology of the thyroid that this study of a large series of cases was undertaken.

Material.—Since the opening of the Bender Laboratory, in 1896, a period of about ten years, material removed at operation from sixty-one cases of thyroid disease has been examined. It

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is upon this material, mainly from the surgical clinic of the Albany Hospital, together with three of my own cases, that this present study is based. Including, as it does, examples of all of the more important affections of the thyroid gland, with careful gross and microscopic descriptions, this group of cases offers unusual opportunities for investigation.

This material may be classified as follows:¹

Class.	Disease.	No. of Case.
I.	Simple hypertrophy	26
II.	Adenoma.	9
III.	Recurrent adenoma	3
IV.	Cyst	12
V.	Metastatic thyroid tumor	1
VI.	Exophthalmic hypertrophy	6
VII.	Chronic thyroiditis	1
VIII.	Tuberculosis	2
IX.	Carcinoma.	1

These lesions fall naturally into three groups,—the hypertrophies, the tumors, and the inflammations,—and should perhaps more properly be discussed in this order. Several departures, however, will be made in order to more clearly present the relations of the various lesions. Simple hypertrophy and adenoma as they possess, histologically, much in common, will be considered in sequence, thus affording a better opportunity for differentiation. The exophthalmic type, aside from the fact that it represents a diffuse process, bears no points of resemblance either clinically or pathologically to the simple colloid form and will therefore be considered by itself. The cysts have been found to have such close relationship to the adenomata that they may be considered with the latter.

In the study of each type of lesion, a systematic manner of presentation will be pursued as far as possible. First, a tabulated list of the cases, giving the age of the patient at the time of operation, the age of onset, the duration of the disease and the ultimate outcome when possible, will be presented. Following

¹To these might be added, to make a classification complete, the sarcomata, the fibromata and the mixed tumors, together with acute thyroiditis, all of which are very rare affections and have not occurred in this series.

I wish here to express my thanks to Dr. Pearce for the privilege of using the material at the Bender Laboratory, and also indirectly to Dr. Blumer, whose careful records has made this study possible. Also I wish to thank the surgeons of the Albany Hospital, especially Drs. Vander Veer, Macdonald and Elting, who have allowed me access to their clinical records.

this one or more typical cases will be related in detail, with a brief clinical note and a complete pathologic study. When other cases offer points of interest or importance, not already covered in the quoted cases, attention will be directed to these special features in the general discussion. The etiologic and pathologic significance of the group as a whole will then be considered, and finally, after the consideration of each separate group, a résumé will be made of the main points in diagnosis and treatment of thyroid lesions in general.

I—SIMPLE HYPERTROPHY (COLLOID HYPERTROPHY). TWENTY-SIX CASES.

No.	Age of onset.	Age at operation.	Duration.
1.....	22	23	16 months.
2.....	24	25	12 months.
3.....	.....	68	.....
4.....	13	13	6 months.
5.....	.....	.....	.....
6.....	.....	.....	.....
7.....	.....	30	.....
8.....	24	25	12 months.
9.....	.....	43	.....
10.....	.....	42	several years.
11.....	42	43	1½ years.
12.....	40	43	3 years.
13.....	16	18	2 years.
14.....	24	27	3½ years.
15.....	13	23	10 years.
16.....	13	15	2 years.
17.....	32	40	8½ years.
18.....	44	62	18 years.
19.....	11	18	7 years.
20.....	.....	.....	.....
21.....	15	49	34 years.
22.....	.....	47	.....
23.....	36	53	17 years.
24.....	.....	.....	.....
25.....	.....	56	.....
26.....	.....	28	.....

Average at onset, 24 years; average age at operation, 36 years; average duration, 7 years, 4 months; females, 21; males, 3; sex not stated, 2.

CASE I.—(Path. No. 05-1011.) Male, aged 18; for 7 years has had enlargement of the neck with at times dyspnœa and some prominence of the eyes noticed. His mother is said to have had the same condition.

Physical Examination.—A symmetrical enlargement of the entire neck anteriorly and laterally, but slightly greater on the right side, is seen. The enlargement extends outward and backward on either side and is felt deep under the sterno-cleidomastoid muscle.

Operation, June 15, 1905, by Dr. G. E. Beilby. Cocaine. Transverse Kocher incision. The thyroid gland, with the exception of a portion of the upper part of the left lobe about 4x4 cm. in extent, was removed without difficulty. The right lobe is larger than the left and extends more deeply into the tissues.

Patient made an excellent recovery. In January, 1906, the patient's health was excellent.

Pathology.—Macroscopic Examination: Specimen consists of a thyroid gland showing distinctly right, left and median lobes. Weight, 530 grammes. Left and median lobes have been removed entire; a portion of right lobe is absent. The left lobe measures 12.5x5x4 cm., the median 4x2 cm. and the right 10x5x6 cm. The mass is definitely encapsulated, of firm consistence, distinctly lobulated and of a dark red color. The blood-vessels of the capsule are very large and tortuous. The right and left lobes are somewhat symmetrical and more or less kidney-shaped, with flattening of the posterior surfaces. The right lobe is of somewhat greater diameter antero-posteriorly than the left. On section right lobe is seen to be grayish yellow in color and from the cut surface escapes a thick gelatinous material. It is lobulated; the lobules being composed of numerous alveolar spaces the walls of which are formed of rather firm bands of connective tissue and in which is a colloid material of a clear translucent appearance. Very many large blood-vessels are seen on section. No cysts are present. The left lobe is similar in all respects to the right.

Microscopic Examination.—Sections from four different portions of mass all show practically the same condition. In general the structure is that of the normal thyroid gland. The gland acini, however, are greatly dilated and filled with a homogeneous colloid material which stains with eosin. These acini for the most part are lined with a single layer of cuboidal epithelium. In many are blood-corpuscles and cholesterol crystals. The capsule of the gland is very delicate, and there is but a moderate amount of connective tissue throughout the gland substance.

Microscopic Diagnosis.—Simple colloid hypertrophy.

CASE II.—(Path. No. 97-5). Female, aged 23, single. History of enlargement of the neck in the region of the thyroid for 13 years. The enlargement has gradually increased. Recently patient has complained of dyspnoea, dysphagia and nervousness. No exophthalmus.

Operation.—November 15, 1897, by Dr. Macdonald.

Pathology.—Macroscopic Examination: Specimen consists of a lobulated mass of tissue of firm consistence, measuring 12x6x4 cm. It is divisible into two lateral lobes and a central portion, which probably represents the original thyroid gland. The surface is smooth for the most part, but in places, particularly posteriorly, is covered by vascular adhesions. The cut surface has a yellowish gray color, is irregularly divided into lobules, and is dotted here and there with cysts, containing a yellow,

jelly-like material. This surface is smooth and glistening and covered with a translucent, sticky material. There are no signs of old or recent hæmorrhage into the gland substance.

Microscopic Examination.—The tumor consists of tissue having in a general way the appearance of thyroid gland. It differs from this structure only in a marked increase in the size of many of the gland acini which contains a large amount of colloid material. *Microscopic Diagnosis.*—Simply colloid hypertrophy.

CASE III.—(Path. No. 05-996). Male, aged 60. History of goitre for 18 years which, though of large size, caused no symptoms until two months ago, when severe dyspnœa and dysphagia developed.

Operation.—September 26, 1905, by Dr. Elting.

Pathology.—Macroscopic Examinations: Specimen consists of a flattened encapsulated dark red mass of tissue measuring 11x8x5 cm. having the general appearance of an enlarged thyroid gland. One surface is regular in form and is covered by fine adhesions; the other surface shows irregular lobulations separated one from another by deep fissures. The capsule contains a rich plexus of veins. Loosely attached to this mass is another similarly encapsulated mass 6x3.5x2.5 cm. which is pinkish red in color, lobulated and the seat of numerous small cysts. The surface is covered with fine adhesions. The cut surface of the larger mass shows a greatly thickened capsule surrounding well-marked lobules which have a smooth, glary surface, and appear to be filled with colloid material. The smaller mass on section shows a similar capsule, paler in color and with smaller, less well-marked lobules, and numerous small cysts filled with yellow blood-stained fluid.

Microscopic Examination.—Sections show structure of thyroid gland with capsule greatly thickened. The acini are greatly increased in size and number and filled with colloid. There is no increase in the interstitial substance or in the cells lining the acini.

Microscopic Diagnosis.—Simple colloid hypertrophy.

These three cases illustrate very well this type of enlargement. It is characterized clinically by symmetrical increase in size, which is usually not rapid but extends often over many years. It is true that one lobe may be larger than the other, but the essential change is a diffuse involvement, and the term "simple goitre" or "simple hypertrophy" should be applied only to those lesions which thus involve the entire gland.

Histologically, the characteristic feature is a dilatation of the thyroid vesicles, the result of the increased colloid secretion. There is lack of uniformity in the size of the vesicles, but it is rare to observe any portion of the gland which shows normal vesicles. The connective-tissue stroma in the earlier cases is often found to be somewhat scant, but definite lobulations can always be made out. After the condition has existed for a number of years secondary changes may produce a rather complex

picture. These are most frequently hæmorrhage into the alveoli, with associated degeneration and pigmentation in focal areas. Infiltration of leucocytes and lymphoid and plasma-cells is not infrequent. The connective tissue in cases of long standing is usually very abundant. Calcification is common as a late degenerate change. Cysts of large size in a gland showing simple hypertrophy have not been observed. Minute smooth walled cysts formed evidently by the rupture of the walls of adjacent vesicles, with fusion of their colloid contents, are commonly present.

Etiology.—It will be remembered that in the early embryonic thyroid colloid is not present in the epithelial vesicles. The colloid secretion makes its appearance at about the time of birth and first in small amounts, but with the advancing age of the child the individual vesicles show increased dilatation; the gland probably attaining its most active secretory stage during youth or early adult life. An enlargement of the thyroid at this period is very common, but it usually disappears at twenty-three to thirty years of age. This enlargement probably represents a simple hypertrophy of the organ. In explaining this condition of simple hypertrophy, then, it seems proper to infer that in a certain number of cases, instead of a subsidence of this physiologic hypertrophy, the process in an exaggerated form continues and a permanent hypertrophy is the result. In this series it is seen that while before twenty years of age only four cases came to operation, in six the age of onset was before twenty and in four others, in which the age of onset is stated, it was between twenty and thirty years, making nearly one-half of the recorded cases appearing either in youth or early adult life. Pregnancy in a few instances has apparently been the exciting cause.

In simple hypertrophy there is as a rule no symptoms except those produced by pressure upon the structures of the neck. Circulatory disturbances with extreme enlargement seem to be fairly common. Vertigo, which is frequently a symptom, is due, possibly, to pressure of the enlarged gland upon the blood-vessels of the neck. The duration of the condition varies greatly, for the patient seldom seeks advice until the pressure symptoms become severe. Mere deformity causes no concern, but when respiration or deglutition becomes difficult relief is sought. The periods of time represented in these cases vary from a few months to thirty-four years. The size to which the gland may attain also varies greatly. There seems to be no relation between

the duration of the condition and the size of the gland. The case showing the most extensive hypertrophy in this series is Case I, quoted above.

In the condition of simple hypertrophy, then, three things may occur. First, there may be a subsidence of the active secretory process after puberty or during young adult life, and a diminution of the amount of colloid present with a return of the gland to its normal size. These are the cases of moderate enlargement. Second, the epithelium may cease to secrete colloid material after a certain age is reached, but fail to undergo retrogressive changes and the enlargement become a permanent one. Instances of this nature are frequent. The hypertrophy is of moderate degree causing as a rule no subjective symptoms, and but rarely demanding operation. Third, a condition similar to No. 2, in which in addition we see in later life, after a quiescence of many years, a rapid increase in the size of the already hypertrophied organ. This enlargement is apparently due to two causes—an increase in the colloid secretion, as observed in the primary enlargement, and an actual reproduction (hyperplasia) of thyroid tissue. This latter is apparently the process present in the majority of cases. Only a portion of the gland may be secondarily affected. The following case, which clinically was considered to be malignant, illustrates this type.¹

CASE IV.—(Path. No. 05-1114). Female, aged 53, goitre with slow growth for 17 years. First began during pregnancy. During the past seven months the enlargement has been rapid and confined chiefly to the left lobe. Dyspnœa and dysphagia marked.

Operation, October 25, 1905, by Dr. Vander Veer. Considerable difficulty was experienced in removing the gland, owing to its deep attachments.

Pathology.—Macroscopic Examination: Usual appearance of old hypertrophic gland with increase of connective tissue, degeneration and calcification in areas, but in addition a large amount of comparatively normal thyroid tissue, differing perhaps in that it has a more cellular appearance.

Microscopic Examination.—The sections show in general a simple hypertrophy with fairly large colloid vesicles lined by the usual epithelium. Here and there, however, are areas of small vesicles, some filled with cells and others containing a little colloid representing young thyroid tissue in various degrees of development. Small masses of epithelial cells are not infrequently observed outside of the colloid vesicle and probably represent focal zones of new thyroid tissue or compressed epithelial vesicles.

¹ Under "Carcinoma" will be discussed the frequency with which hypertrophied glands of this nature undergo carcinomatous changes.

The histologic appearance in this case suggested the possibility of carcinoma. There is, however, no definite evidence of invasion of the old connective-tissue stroma by the new-formed thyroid tissue. This is a histologic picture frequently observed in cases of old simple hypertrophy in which there has occurred recent growth. Patient made a good recovery from the operation and was well six weeks later.

II.—ADENOMA; 9 CASES

No.	Age of Onset.	Age at operation.	Duration.
1.....		38	
2.....	16	21	5 years.
3.....	37	55	18 years.
4.....		24	
5.....	18	23	5 years.
6.....	25	26	1 year.
7.....	35	40	5 years.
8.....	28	30	2 years.
9.....		43	

Average age at onset, 26 years; average age at operation, 33 years; average duration, 7 years; female, 8; male, 1.

CASE V.—(Path. No. 755). Male, aged 55. Onset of tumor 18 years ago in region of thyroid. Has grown larger during the last two years. No symptoms except tumor.

Operation, September 26, 1904, by Dr. Elting. Excision of tumor of left lobe. The right lobe and isthmus seemed normal.

Pathology.—Macroscopic Examination: Specimen consists of an encapsulated tumor of the thyroid, measuring 8x6x3 cm. Tumor mass has been cut open. On section it presents a rough nodular surface mottled with dark red areas. Surrounding these is a brownish yellow zone and still further out a deep red finely granular zone. The lighter areas are approximately 1x.5 cm., the dark red areas measuring about 2x1 cm.

Microscopic Examination.—There is distinct hyperplasia of both glandular and interstitial tissue, the glandular elements in places being massed together and compressed, with irregular outlines; in other places dilated and filled with colloid material; in still other areas the glandular elements are atrophied with marked increase of interstitial tissue, which is highly oedematous and hyaline.

Microscopic Diagnosis.—Mixed adenoma of the thyroid gland.

CASE VI.—(Path. No. 05-1207). Female, aged 23. Tumor for 5 years. Rapid enlargement during the past eight months; dyspnoea. Tumor of the right lobe pushing the trachea and larynx to the left.

Operation, November 14, 1905, by Dr. Elting.

Pathology.—Macroscopic Examination: Specimen consists of a definitely encapsulated tumor 10x5x8x6 cm. Capsule is smooth and apparently free

from adhesions. At one pole is a small irregular tumor. The capsule is very dense and fibrous. On section the tumor presents a uniform grayish appearance. Tissue is exceedingly soft and friable. No fibrous bands are seen. In the centre of the mass the tissue is disintegrated and there is found a small cavity filled with blood-stained colloid material. On section, the smaller tumor attached to one pole of the larger has the appearance of normal thyroid tissue and evidently represents the isthmus of the thyroid gland.

Microscopic Examination.—(See Fig. 1.) The general structure of thyroid tissue can be seen, but there are no definite lobulations as are found in the normal and hypertrophied gland. The thyroid vesicles, however, are greatly enlarged and filled with a homogeneous colloid material which stains with eosin. In some areas epithelium lining the individual vesicles has disappeared and their contained colloid has coalesced, forming large irregular pink staining masses. Throughout the colloid material is seen isolated cells and clumps of cells which stain poorly and which represent the desquamated epithelium. There are also numerous red-blood cells. When an epithelial lining is present instead of a single layer of cells we see often several layers, and here the cells stain very poorly and have no definite arrangement. The connective-tissue stroma is very scant and the alveolar walls are delicate. There are a few small epithelial vesicles which contain no colloid and represent young thyroid tissue. The general picture is one of early degeneration.

Microscopic Diagnosis.—Colloid adenoma of the thyroid.

CASE VII.—(Path. No. 64-5.) Female, aged 26. Duration of illness 8 months. The prominent symptoms are pain, dyspnoea and dysphagia.

Operation, February 20, 1899, by Dr. Vander Veer. No note on operation.

Pathology.—*Macroscopic Examination*: Specimen consists of a globular nodule measuring 4x3x1.5 cm. It is completely encapsulated. Its outer surface is covered here and there with torn adhesions which are attached to the capsule. The nodule is soft in consistence. On section the cut surface bulges somewhat; it is mostly of a gray-white color and rather translucent in appearance. Scattered through it are a few whiter areas suggestive of necrosis and one or two minute hæmorrhagic points.

Microscopic Examination.—The section shows both the capsule and tumor substance. The capsule is composed of several layers of fibrous tissue, in the outermost layer of which can be seen compressed thyroid vesicles probably the result of the encroachment of the growth upon the normal gland-tissue. The tumor proper is made up of closely packed epithelial vesicles, which as a rule are empty or have only a cellular content. In this respect the tissue resembles that of the foetal thyroid, but differs in that the cells are of a higher type. In some of the vesicles, farthest from the periphery, there is a small amount of colloid present, this probably representing the oldest portion of the growth. The connective-tissue stroma is very scant and there are no lobulations visible.

Microscopic Diagnosis.—Mixed adenoma of the thyroid gland.

CASE VIII.—(Path. No. 95-95.) Female, aged 21 years, married. A tumor the size of a marble appeared in the region of the right lobe of

PLATE IV.

To Illustrate Dr. Beilby's Article on "Affections of the Thyroid Gland."

Albany Medical Annals, January, 1907.

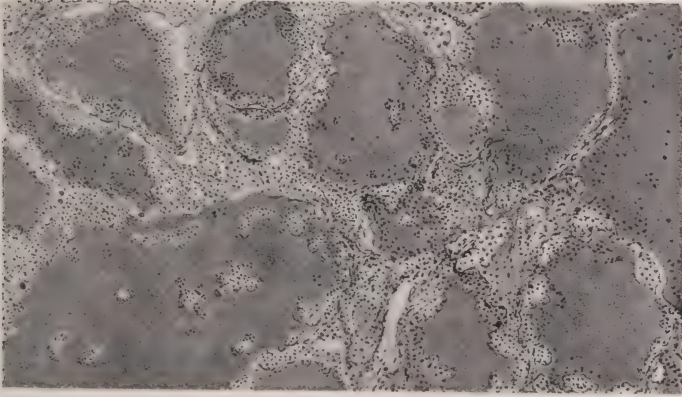


FIG. 1.—Microscopic drawing of a colloid adenoma.

The illustration shows that the thyroid vesicles are distended with a homogeneous colloid substance in which are clumps of epithelium and isolated epithelial cells.

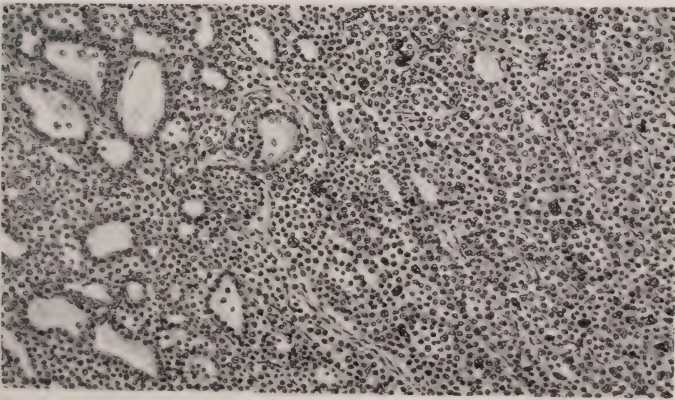


FIG. 2.—Microscopic drawing of a recurrent adenoma 4 oc., 3 obj., Leitz.

The left portion of the drawing shows tissue containing a few apparently normal thyroid vesicles. The right portion shows tissue in which no normal vesicles are present, but composed of epithelial cells, having no typical arrangement, and in a few of which a large, irregular, and deep staining nucleus is seen.



the thyroid five years ago, two years after her last child was born, and has gradually increased in size since. Dyspnœa has been more marked of late.

Operation, January, 1905, by Dr. Elting. Ether. "The patient took the anæsthetic very badly. Resuscitation was necessary during the operation. The tumor was removed through an incision along the anterior border of the right sterno-cleidomastoid muscle."

Pathology.—Macroscopic Examination: Specimen consists of an encapsulated tumor measuring 2.5x2x1.5 cm., enclosed in a yellowish white capsule. On section it is fairly firm in consistence and presents a brownish white surface. Very little connective-tissue stroma can be seen.

Microscopic Examination.—Section shows a thick fibrous capsule with normal appearing thyroid tissue in its outer layer. The structure of thyroid gland can be made out, but the individual vesicles are small as a rule and contain no colloid. In a few areas the vesicles are elongated and assume a tortuous tubular shape. The connective tissue shows hyaline degeneration and œdema.

Microscopic Diagnosis.—Pure adenoma of the thyroid.

Etiology.—These adenomata comprise the solid non-malignant encapsulated tumors of the thyroid. They may arise within the tissue of the thyroid gland, without being connected with its capsule, or at some distance from the gland. They occur usually singly, but in two instances in my series they occurred as multiple tumors of one lobe. In one of these were present two smaller tumors, each about 3 cm. in diameter, attached to either pole of a larger tumor 8x3x3 cm. in size. In the other a tumor of the left lobe 8x6x3 cm. in size had attached to its capsule at one pole a small nodule about 2 cm. in diameter, which macroscopically had the same appearance as the larger tumor.

As to the location, five occurred within or apparently arose from the right lobe, two from the isthmus, and one from the left lobe, and in one instance the situation was not stated. These tumors are in my experience usually of small size. The largest was 10x8x6 cm. and the smallest 3 cm. The average diameter was about 5 or 6 cm.

Clinically the adenomata are not as a rule difficult to recognize. They are hard and firm, freely movable, and generally present no symptoms except tumor. By their pressure upon the trachea or œsophagus they may produce dyspnœa or dysphagia and in two instances the extreme nervousness of the patient was ascribed to such pressure. The age of onset seems to correspond to that of adenomata in other glands of the body, occur-

ring during youth or early adult life, when glandular activities are at their height. The age of onset was generally between 16 and 35 years; five or over one-half between the twentieth and thirtieth years. From the fact that these tumors produce no subjective symptoms, and that their growth is as a rule slow, it is often many years before the patient seeks surgical relief. It is probable that these tumors are far more common than indicated by this series, for it is only when they produce pressure symptoms or cause considerable disfigurement that the advice of the surgeon is sought.

No important etiologic factors, other than the age, can be determined. In one case, the tumor appeared two weeks after confinement.

There is nothing in the records to indicate that the thyroid gland in these cases was abnormal. Where observations were made by the operator, it is noted that the gland appeared normal.

Pathology.—The adenomata are definitely encapsulated tumors, usually smooth, but occasionally somewhat nodular or lobulated. The tumors vary considerably in consistence but are usually soft.

Two distinct varieties may be recognized, depending upon the type of vesicle. In the first, which we may designate as *pure adenoma*, the growth is found to be composed of closely-packed epithelial vesicles, containing little or no colloid and very small amount of connective tissue. Many of the acini are seen to be filled with epithelial cells. In the other variety, we have a condition in which histologically the picture very closely simulates that of simple hypertrophy. These we may designate as *colloid adenomata*. The epithelial vesicles are dilated and filled with colloid material. There is usually but a single lining layer of epithelium.

An interesting feature of these tumors is their tendency to undergo various degenerative changes. The colloid adenoma resembles somewhat histologically the simple hypertrophy, but differs, however, in some important respects. Thus the stroma is less abundant, the walls of the vesicles are thinner, and the epithelial cells lining the vesicles in the hypertrophied organ are of a lower type than those in the colloid adenoma. To make a distinction between simple hypertrophy and adenoma is easy clinically and from a macroscopic examination of the specimen, but upon histologic examination distinct differences in structure are not so evident.

Briefly stated, the main differences seem to be these:

(a) As to the epithelium lining the vesicles. In the adenoma we find the cell tending to a columnar character, while in the hypertrophy the cells appear more compressed and assume the appearance of a cuboidal type.

(b) As to the contents. Colloid. In the early adenoma, epithelial tissue is the one tissue present. Small amounts of colloid are visible, but this is not seen in appreciable amounts until a later stage. In this later stage the colloid is increased markedly in amount, and approaches as to quantity the amount which is visible in the hypertrophied gland. Besides this colloid material, which in certain amounts is normally present, the alveoli may also contain desquamated epithelium and red-blood cells. In the colloid adenoma there is usually present a large number of epithelial cells within the alveolus, which stands in marked contrast to the hypertrophy where no desquamation is evident. Again in the adenoma small hæmorrhages into the alveoli are more common.

(c) As to the stroma. In the adenoma scarcely any connective tissue stroma is visible, the vesicles with or without colloid material being closely packed together. In the hypertrophy, however, while a number of vesicles containing considerable colloid are in close proximity, being separated by small amounts of connective tissue, the groups of vesicles are isolated and between these groups dense and rather large amounts of connective tissue are visible.

Depending upon the secretory activity of the epithelial cells of the adenomata, a complex picture may be produced.

First, All of the epithelial cells may begin to secrete actively and varying amounts of colloid may appear within the alveolus, producing the *colloid adenoma*.

Second, All the epithelial cells may fail to secrete, and then we have a type of gland in which no colloid material is visible, resembling in many respects the type of tumor described as *fatal* adenoma but differing in that the vesicle is not solid—i. e., made up of several layers of epithelial cells, but is merely an alveolus lined by a single layer of cells in which no colloid material is evident.

Third, A number of the cells may remain dormant while the remainder are secreting colloid material, thus presenting the picture which many authors describe as *mixed adenoma*.

Cyst Formations.—Here I wish to emphasize the fact that undoubtedly a large percentage of cysts of the thyroid have their origin in adenomata. Very frequently we find in the walls of cysts thyroid tissue resembling simple hypertrophy. Cyst formations however in thyroids that have undergone simple hypertrophy is an extremely rare occurrence. None of the cases reported in this series show aught but minute cysts formed by the rupture of the walls of a few adjacent vesicles and the coalescence of their contained colloid. The adenomata, however, appear very prone to undergo degeneration with the formation of cysts. In Case VI it was seen that the tumor presented distinct evidences at its center of beginning cystic formation.

III.—RECURRENT ADENOMA. THREE CASES—MALE 2, FEMALE 1.

The adenomata, as has been shown in the preceding section, occur singly as a rule and do not present histologically or clinically signs of malignancy. We have, however, three cases in which there has been either recurrence at the site of operation or a subsequent appearance of a similar tumor in other portions of the gland. These were clinically considered to be malignant, and the microscopic study revealed a more or less atypical growth of epithelium.

CASE IX.—(Path. Nos. 97-3 and 64-19.) Male, aged 49. Thyroid tumor appeared twenty years ago and gradually increased in size up to five years ago, causing dyspnœa and dysphagia.

Operation, February 6, 1897, by Dr. Macdonald. Removal of tumor. Five months later a similar tumor appeared in the isthmus and gradually increased in size for four and a half years; and now presents as a firm apparently encapsulated tumor in median line of neck about 4x6 cm. in size. The lateral lobes of the thyroid show slight enlargement. The surgeon, Dr. Macdonald, considered the growth to be malignant and the entire gland was therefore removed.

Pathology.—(First operation.) Macroscopic Examination: Specimen consists of a portion of the thyroid gland measuring 9x6 cm. The outer surface presents a mottled appearance, the prevailing color being red, with here and there small areas of discoloration due to hæmorrhage. The surface vessels are distended. On section the specimen shows a large empty cyst, the walls of which are thin and covered by gelatinous substance, probably colloid material. Other cysts are seen of smaller size than the one just described. They are filled with a colloid material and in some are small pea-sized hæmorrhages. Portions of the growth have undergone calcareous degeneration.

Microscopic Examination.—No definite capsule is seen. The tumor proper is made up of tissue of the same general type as that of the normal thyroid but which shows greater irregularity in the gland acini. The connective-tissue network is moderately augmented; this is evident in the size of the strands. Irregularly distributed throughout the specimen are collections of epithelial cells of the same appearance as those constituting the normal gland structure. The gland spaces are for the most part smaller than normal, though here and there dilated spaces may be seen. All alveoli contain homogeneous pink-staining material, presumably colloid; in a few hæmorrhage has occurred. There is marked hyperplasia of the epithelial cells.

Microscopic Diagnosis.—Adenomatous cysts of the thyroid.

Second Operation.—(Path. No. 64-19.) *Macroscopic Examination:* Specimen consists of six pieces of tissue which are evidently from the thyroid gland. The largest portion measures 7x8x4 cm. Its outer surface presents a somewhat lobulated appearance and is covered with a smooth membrane to which are attached a few fibrous adhesions. Beneath the membrane the color of the tissue is a light red. On section the tissue is of fairly firm consistence, but varies somewhat in character in the different portions. In some places it presents a semi-translucent grayish white appearance, in others it is darker in color and somewhat more opaque. Considerable portions of the specimen are made up of the colloid material. Here and there are definite calcareous deposits. In one of the smaller portions which measures 7x4x2 cm. the tissue resembles that already described except that an area about 3.5 cm. in diameter is definitely hæmorrhagic. The remaining pieces which compose the specimen are similar in structure to the portions described.

Microscopic Examinations.—We have here the same general type of tissue seen in the tumor removed five years previously. Some of the gland acini are greatly enlarged and filled with colloid material; others are small and have only a cellular content. The epithelium approaches the columnar type and in many places shows no typical arrangement.

Microscopic Diagnosis.—Adenoma of thyroid.

In this case the specimen first removed (97-3) is a cyst which has apparently arisen by degeneration of an adenoma, while the second growth (64-19) presenting the same characteristics clinically, was an adenoma. The significance of this in relation to cysts will be discussed under that heading.

CASE X.—(Path. No. 64-26.) Female, aged 45. Tumor of right lobe which first appeared seventeen years ago (1888). After five years it reached the size of a lemon and was removed September, 1893, no pathologic study was made. Four years after first operation (1897) a similar tumor appeared in the left lobe and was recovered six years later (Sep. 21, 1903), by Dr. Macdonald. This tumor the patient states seemed exactly similar to the first one. Both finally produced pressure symptoms upon the trachea and œsophagus, and for relief of these symptoms patient sought operation. With the second tumor there was con-

siderable pain, and dyspnœa and dysphagia were more pronounced. The description of this tumor follows:

Pathology.—Macroscopic Examination: Specimen consists of a portion of thyroid gland measuring approximately 11x4.5x3.5 cm. Beneath the capsule except in a small portion of the end of the tumor can be seen numerous pea to cherry-sized cysts. In the center of the specimen can be felt a hard stone-like mass the size of a cherry. On section all but a small area at one end of the specimen is seen to be filled with various sized cysts containing a clear colloid material. The wall of one of the larger cysts is completely calcified and measures 2 mm. in thickness.

Microscopic Examination.—The gland alveoli are numerous and for the most part distended by homogeneous colloid material. Some contain also desquamated cells and leucocytes many of which are loaded with pigment. The alveoli surrounding the more distended alveoli are small and arranged concentrically. Other areas show small irregularly developed alveoli. Several are irregular and without any distinct limiting wall and contain a bluish pink mucoid-like material, blood pigment and elongated connective-tissue nuclei. The interalveolar tissue shows hyaline degeneration in places.

Microscopic Diagnosis.—Adenoma with hæmorrhage and calcification and a tendency to an atypical growth of the epithelium.

About two months ago, two years after the second operation, a tumor appeared in median line of the neck and has slowly increased in size. This tumor is clinically an adenoma. There is no evidence of recurrence at the sites of previous operations. Patient's general health is excellent. The patient is considering an operation.

CASE XI.—(Path. No. 97-2.) Male, aged 60. Tumor removed from the region of the right lobe of the thyroid by Dr. Macdonald nine years ago.

Pathology.—Macroscopic Examination: Specimen consists of a mass almost the exact size and shape of a kidney. The surface is irregular and in places it is covered by a distinct capsule which is somewhat hæmorrhagic. In other places patches of connective tissue containing large blood-vessels lie on the surface. It is somewhat lobulated and of a brownish yellow color. On section at one point is seen a cyst-like cavity containing a friable grumous material of a yellowish color, slightly viscid and apparently cell-detritus. The remainder of the tumor can be divided into a cortical and medullary portion. The cortical portion averages about 1.5 cm. in width and is distinguished from the medullary by its light color and more or less radial striation due to the presence in its substance of fine bands of connective tissue. The medullary substance is distinctly pinker in color than the cortical, and the bands of connective tissue which traverse it have no distinct or regular distribution. The consistence of the tumor as a whole is firm, the cortical substance, perhaps being a little firmer. Distinct areas of calcification are present.

Microscopic Examination.—(See Fig. II.) Sections show the tumor to consist of a capsule and tumor substance. The capsule is for the most part made up of fibrous tissue. Here and there, however, it contains small collections of cells of the same type as the gland-cells, and

it is evidently formed of compressed gland substance. The tumor itself is composed of a tissue of the same general type as normal thyroid tissue. It differs in the greater irregularity and shape of the gland acini. Near the capsule the connective-tissue network often runs in parallel striæ passing from the capsule into the depths. In the deeper parts of the tumor this cannot be made out. The colloid material in one or two places has undergone calcification.

Microscopic Diagnosis.—Adenoma of the thyroid.

Recurrence in same location after seven years. This second growth was an encapsulated tumor which had reached the size of a hen's egg. Specimen not saved for pathologic study.

A year after the removal of the second growth (April, 1903) there was again a recurrence which soon reached considerable size. On consulting a surgeon at this time the process was considered malignant and operation not advised. From this time until January, 1906, about one and one-half years, when patient was last seen, there has been constant increase in the size of the primary growth, which now measures 7x6 cm. in size. It is located in the right lobe of the thyroid and extends apparently deep into the neck. Near the upper pole of this tumor there is a second mass, which made its appearance about one year ago. This is entirely distinct from the older tumor, is superficial, and has no deep attachments. It is ovoid in shape, 5x4 cm. in size, and moves about freely underneath skin, which is nowhere adherent over either tumor. Patient has thus far refused operation.

We have then in this case a thyroid tumor which has returned twice after removal, the condition extending in all over a period of nine years, and in which there has developed now in the region of the recurrent tumor a secondary growth. The patient is still in fair general health but suffers from the effects of pressure. The question of carcinoma arises. The long duration would almost exclude this possibility. The growth, while of large size, is as far as can be determined, encapsulated, and affects the health of the patient only by its mechanical presence. Histologically, the first growth removed can be characterized only as an adenoma, though it does present an unusual picture, similar to that in the other two cases described in this group. An interesting feature is that in all of these cases the patients are now over 40 years of age. In one the onset of the first growth was at 51 and in the other two, one at 29 and the other at 32 years of age, thus differing from the usual history of adenoma.

IV.—CYSTS. 12 CASES.

No.	Age of onset.	Age at operation.	Duration.
1.....	10	16	6 years.
2.....	21	26	5 years.
3.....		27	
4.....	17	26	9 years.
5.....	38	42	4 years.
6.....	33	41	8 years.
7.....	36	43	7 years.
8.....	15	24	9 years.
9.....	25	33	8 years.
10.....	19	20	18 months.
11.....	49	49	4 months.
12.....	39	43	4 years.

Average age of onset, 27 years and 6 months; average age at operation, 32 years and 6 months; average duration of disease, 6 years; females 7, males 3; sex not stated 2.

We recognize three main types of thyroid cysts, *simple*, *hæmorrhagic*, and *adenomatous cysts*.¹

Simple Cysts.—Three cases.

CASE XII.—(Path. No. 06-197.) Male, aged 16 years. When six years of age his parents noticed a small lump about the size of a hickory-nut in the region of the left lobe of the thyroid. This increased very little in size until four years ago, since which time there has been slow but gradual enlargement. There is no exophthalmus or tremor, but the boy is of a nervous disposition.

Operation, January 22, 1905, by Dr. Beilby. Anæsthetic, cocaine. In the region of the left lobe of the thyroid is found a smooth ovoid tumor about 5x9 cm. with its larger diameter extending from the thyroid cartilage towards the ear. No lobulations can be made out. The tumor is very tense and no definite fluctuation can be determined. It is attached to the larynx and moves up and down perceptibly on swallowing. The cyst was excised without rupture. The thyroid tissue about the cyst appears normal.

Pathology.—Macroscopic Examination: Specimen consists of a cyst of the thyroid gland measuring about 6x9 cm. in size. Its outer surface is smooth and only at the pole can thyroid tissue be seen. On opening the cyst the walls are found to be very thick and fibrous. The contents of the cyst is a brownish translucent fluid with numerous oil-globules floating about in it. The inner surface of the cyst-wall is very white

¹In addition to these, occur the small multiple cysts found with great frequency in the simple hypertrophic gland. They never attain any great size and are undoubtedly caused by the coalescence of two or more distended vesicles with fusion of their colloid contents. Clinically, they never produce any symptoms and are only of pathologic interest.

and fibrous and is covered with many flakes of fibrin and some atheromatous patches. One small area of the thyroid tissue 1x1.5 cm. projects from the inner wall of the cyst.

Microscopic Examination.—Cyst-wall: outer layer of loose fibrous connective tissue with blood-vessels and a very cellular central zone. At first glance these cells look like lymphoid cells, but the presence here and there of small amounts of colloid material leads to the conclusion that they represent greatly compressed thyroid vesicles with atrophied epithelium. The next layer is the inner wall of the cyst, which is composed of loose lamellæ of tissue and masses of blood-corpuscles, suggesting an organized blood clot.

Microscopic Diagnosis.—Simple cyst of thyroid.

At present, one year after operation, patient is perfectly well.

This is the type of a thin-walled cyst. They occur in glands that are apparently normal. The cyst-wall is composed of compressed thyroid tissue. The inner wall is usually smooth and fibrous but may be lined with a mass of epithelial cells. The contents is usually fluid but varies both in color and consistence, the color depending on the amount of blood and the consistence on the admixture of colloid.

Hæmorrhagic Cysts. One case.

The following case illustrating this type, is perhaps almost unique.

CASE XIII.—(Path. No. 195.) Male, aged 41. Eight years ago patient fell backward down stairs. Noticed at once, following the fall, a swelling in the region of the right lobe of the thyroid gland. This increased in size but little until a few days previous to operation, when a rapid enlargement occurred. This was accompanied by a constant dull pain for which the patient sought advice.

Operation, March 16, 1904, by Dr. Elting. Nitrous oxide and ether. Excision of the right lobe of the thyroid. 50 c.c. of brownish fluid was evacuated from the cyst during its removal.

Pathology.—Macroscopic Examination: Specimen consists of an encapsulated mass, evidently comprising the entire right lobe of the thyroid gland. It measures 10x5x4 cm. On section a large cavity is found from which was evacuated 50 c.c. of reddish brown fluid containing necrotic tissue. The necrotic material is both free in the cavity and adherent to the walls of the cyst. Here and there in the walls are found calcified areas, none larger than 5 mm. in diameter. The wall of the cyst averages about 5 or 6 mm. in thickness.

Microscopic Examination.—Sections show the cyst-wall to be composed of thyroid tissue, in general fibrous, but in some areas quite normal. There are areas of hemorrhage and necrosis. In these areas and surrounding them is an extensive infiltration with polynuclear leucocytes, though in general the tissue is infiltrated with lymphoid—and plasma-cells. The picture everywhere presented is that of chronic inflammation with tissue degeneration and focal areas of necrosis. The type of thyroid vesicle where it can be made out is that of the normal gland.

Microscopic Diagnosis.—Hæmorrhagic cyst with chronic thyroiditis, hæmorrhage and necrosis.

Hæmorrhage has always been assigned as an important factor in the production of thyroid cysts. The presence of hæmorrhage, recent or old, in cyst contents or its walls is an almost constant observation. It seems probable, however, that this is much more commonly a secondary process than the true etiologic factor. That a primary hæmorrhage, produced either by violent trauma, or the rupture of a small blood-vessel from any cause within the substance of the thyroid gland, is capable of producing later a cyst there can be no doubt.

Adenomatous Cysts.—Ten cases.

That the adenomata play such an important rôle in the production of cysts seems not to have been generally recognized. In this series, 70 per cent., or 10 of the 14 cases, present evidence of having arisen from this type of tumor.

CASE XIV.—(Path. No. 05-010.) Female, aged 26. Tumor of neck nine years, gradual increase in size, more rapid during the last year. Dyspnœa and tachycardia on exertion. Pulse constantly 104-106. Marked harshness of voice. Complaints of headache and pain in right ear. Tumor is situated in median line and moves with deglutition.

Operation, July 17, 1905, by Dr. Beilby. Cocaine. Transverse incision. Excision of cyst of isthmus. The remainder of the thyroid gland appeared normal.

Pathology.—Macroscopic Examination: Specimen consists of a thick walled cyst of the thyroid which was removed at operation without rupture. It is nearly globular in shape but slightly flattened in its anterior-posterior diameter. It measures 7.5x5.5 cm. Its capsule is of a pink color, very delicate and easily torn. The blood-vessels are large and tortuous. It is rather soft and fluctuant. On section it is found to contain a brownish bloody fluid. This cavity is approximately 4.5x3 cm. in size. The wall of this cyst measures from 5 to 15 mm. in thickness and seems for the most part to be composed of apparently normal thyroid tissue. There are some areas, however, which resemble glandular hyperplasia. Again other areas show hæmorrhage and necrosis. Blood-vessels are large and numerous.

Microscopic Examination.—Section through cyst-wall shows a thick capsule, which has apparently been formed by compression of thyroid tissue. Scattered throughout are many normal thyroid cells and in some areas are acini filled with colloid material and lined with cuboidal epithelium. From this capsule strands of connective tissue extend to the deeper portion of the cyst wall and form a definite connective-tissue framework, presenting somewhat the histologic structure of thyroid acini. These spaces, however, are packed with what are apparently desquamated epithelial cells. A few normal acini are noticed, which

are filled with colloid material. Other sections show in addition free masses of red-blood corpuscles, and marked hyaline degeneration of the connective tissue.

Microscopic Diagnosis.—Cyst in a *mixed adenoma*.

At present, eight months after operation, the patient is in excellent health. The huskiness of her voice has largely disappeared, her pulse has dropped ten to twelve beats per minute, and she is not so nervous as before operation.

CASE XV.—(Path. No. 64-23.) Female, aged 26. Has had a tumor in the right side of the neck in the region of the thyroid for five years. Tumor first appeared during first pregnancy. There has been a gradual slow increase in size up to three years ago, when after the birth of her second child the growth became more rapid.

Pathology.—Macroscopic Examination: Specimen consists of a globular cystic mass $5 \times 3.3 \times 2.5$ cm., the outer surface of which is smooth and encapsulated. On section the cyst contents are found to consist of a brownish fluid. The cyst wall is smooth. The cyst originates in the thyroid gland, and to its outer surface fragments of normal thyroid-tissue are adherent.

Microscopic Examination.—The capsule is composed apparently of compressed thyroid alveoli. Within the capsule proper the tissue has the structure of thyroid and very slightly approaches the characteristic foetal type of gland. No colloid is visible.

Microscopic Diagnosis.—Cyst in a pure adenoma.

CASE XVI.—(Path. No. 97-4.) Female, aged 20; has had a tumor in the region of the isthmus of the thyroid for eighteen months.

Operation, October 19, 1897, by Dr. A. Vander Veer.

Pathology.—Macroscopic Examination: Specimen consists of an oval piece of tissue $4.5 \times 3.5 \times 2.5$ cm. It is for the most part cystic, the cystic contents having been removed, leaving a cavity which occupies about two-thirds of the tumor, the upper third consisting of a solid mass of tissue. The outer surface of the tumor is moderately smooth, but here and there are the remains of adhesions. The cyst-cavity is the size of a walnut and its walls are thin, averaging about 1 mm. in thickness. The inner surface is very irregular, and is traversed here and there by raised bands. The color varies from pinkish to grayish white. Secondary cysts varying from those the size of a pin-head to those the size of a pea can be made out in the walls. They contain a mucilaginous yellowish-brown fluid. In places on the inner surface of the cavity are areas of calcareous deposit. The solid portion of the tumor is only moderately firm in consistency and measures 2×1 cm. Its cut surface is of a yellowish gelatinous appearance. It contains a number of small cysts filled with fluid, which varies in color from a light to a dark brown.

Microscopic Examination.—The tumor on section presents varying appearances. In some places it has the ordinary appearance of thyroid gland structures, being made up of cavities of various sizes, containing colloid material, between which are cellular bands of tissue. This appearance is confined particularly to the portion of the tumor furthest removed from the cyst cavity. The walls of the cyst cavity are made up

for the most part, of a firm solid tissue, composed of a basement substance containing numerous epithelial and spindle shaped cells. In this substance are to be seen the compressed remains of the thyroid alveoli and also a very large number of cells containing a yellowish brown pigment, evidently changed blood-pigment. At one point are present in the tumor a number of wedge-shaped spaces, the walls of which are formed by the tumor-tissue. In these are occasional spaces representing a deposit of crystals, presumably cholesterin. The cells about these spaces are multinucleated, apparently foreign-body giant-cells.

Microscopic Diagnosis.—Cyst in a colloid adenoma.

It will be recalled that in discussing the adenomata we recognized two types of thyroid vesicles—one large and containing colloid, and the other smaller in which no colloid was visible; also a third variety, combining the characteristics of these two. In the walls of these cysts we find a histologic structure which exactly corresponds to one or the other of these types. As we might perhaps expect, the colloid adenoma is the variety which most frequently undergoes cystic degeneration. Five, or one-half, of the cysts in this series were of this type. In only one could no colloid be seen in the tissue of the cyst-wall. Four were of the mixed variety. Aside from the histologic evidence of the production of cysts from solid adenomata, we have in certain of the cases a gross appearance indicating beyond doubt that the tumor was originally an adenoma and that degeneration has taken place with a resulting cyst formation. Of importance in this connection is the observation of cholesterin crystals indicating fatty transformation of the epithelial elements. If the process is an early one the cysts may be only of small size and the structure of the adenoma still be retained.

As the degeneration advances and the fluid contents of the cyst is increased in amount, there is compression of the alveoli and later many of the cells may atrophy and the stroma undergo various forms of degeneration, giving widely varying and very complex pictures. The inner layer of the cyst may then be said to be composed of the remains of the adenomatous tissue, while the wall proper represents the fibrous capsule of the original adenoma, and the outer layer, the stroma and compressed alveoli of the surrounding thyroid-tissue. With the enlargement of the cyst and its encroachment upon the surrounding normal thyroid-tissue we often get a lamellated appearance. These lamella are as the result of the successive compressions of the normal gland-tissue, with subsequent atrophy of the epithelial structures, leav-

ing only the stroma and alveolar walls. Thus fibrous bands of varying thickness appear. Between these layers are often seen normal thyroid vesicles, and vesicles in various stages of atrophy.

The histogenesis of these cysts may be said to be as follows: In the beginning we have an encapsulated adenoma composed of cells which present no colloid secretion. As the growth continues colloid material is secreted and a coalescence of these colloid vesicles in the center of the tumor is to be seen. Hæmorrhage occurs and we have a cystic cavity filled with bloody colloid material. The fibrous capsule of the original adenoma forms the wall of the newly-formed cyst. As the degenerative process continues and the contents of the cyst increases the tumor necessarily becomes larger and pressure is exerted on the surrounding normal tissue, causing atrophy of apparently normal vesicles. As in long continued degenerative processes occurring in other tissues, lime salts may eventually be deposited in the wall of the cyst, giving extensive calcified areas.

V.—ABERRANT OR METASTATIC THYROID TUMORS WHICH ARE HISTOLOGICALLY BENIGN BUT CLINICALLY MALIGNANT.

ONE CASE.

CASE XVII.—(Path. No. 88-68.) Male, aged 65 years. Family and past history not important. Six months ago first noticed a fullness of right side of face and difficulty in breathing through right nostril. Tumor has increased in size rapidly and has been accompanied by considerable pain. At present there is complete occlusion of the right nostril and bulging of right eyeball with inflammation of conjunctiva, and obstruction of tear duct. At the operation by Dr. Vander Veer the antrum of Highmore was opened but only a small portion of the growth was removed. Its extensive character made a complete removal impossible. The clinical diagnosis was sarcoma of antrum.

Pathology.—Macroscopic Examination: Specimen consists of an irregular mass of tissue removed from the upper jaw. There are one or two pieces of bone, the remainder of the tissue being of a grayish white color and having the appearance of granulation tissue.

Microscopic Examination.—The sections indicate that the tissue is that of the thyroid. Two definite pictures are presented. First, large alveoli filled with colloid, lined usually by a single layer of cubical epithelium, and containing throughout the colloid substance many desquamated epithelial cells which take the stain rather poorly. Second, areas showing epithelial hyperplasia but less tendency to colloid secretion, giving the tissue a more solid cellular appearance. On careful examination of these cellular areas they are found to be composed of closely packed thyroid vesicles, some of fair size but filled with cells which approach a columnar

type. Hæmorrhages into the alveoli are frequent. Connective tissue stroma is very scant. The tissue shows signs of inflammation in places, containing a number of polynuclear leucocytes.

Microscopic Diagnosis.—Aberrant or metastatic thyroid tumor.

For the further history of the case I am indebted to Dr. Merritt, of Cherry Valley, who writes me that the growth increased very rapidly after the patient left the hospital and finally involved the right eye. The bony structures he thinks were extensively involved as some of the teeth and a portion of the superior maxilla were lost during the course of the disease. To the best of the doctor's recollection and that of the patient's friends, there was no hypertrophy or tumor of the thyroid gland, either previous or subsequent to operation.

To establish a positive diagnosis of *metastatic adenoma of the thyroid*, we must necessarily have at least clinical evidence that a primary adenoma existed in the thyroid gland. This evidence is wanting. If such an adenoma existed it was so small as to escape notice. Whether or not such a primary tumor existed the case is of equal interest.

There are now in the literature records of about 20 cases of tumors apparently metastases from the thyroid, which were histologically benign. As in a number of these instances there has been no apparent primary thyroid lesion, these cases have been considered as *metastases from normal thyroid tissue*. Where a thyroid lesion has been observed it has been that of simple hypertrophy or adenoma, and the metastatic tumor has had a similar histologic structure. These metastases, which may be single or multiple, have occurred most frequently in bone, and have often been removed under the supposition that they were primary growths. Aside from the fact that these tumors are probably of metastatic origin, they present as a rule no other indication of malignancy. Frequently, however, they have been known to recur after removal and a number of cases have thus resulted fatally. Therefore the important question arises, are not these tumors malignant and should they not always be considered as such by the surgeon?

In the case I report the tumor presented clinically every indication of malignancy. Its invasion of tissue was rapid and death was caused in eight months after its onset. As there never was observed any hypertrophy or tumor of the thyroid gland, we can only assume that if this was a metastatic tumor the metastasis was from normal thyroid tissue. As will be noted, however, in the microscopic study, the growth was his-

tologically a thyroid adenoma and of the type we have described as mixed adenoma.

In the case reported by Oderfeld and Steinhaus¹ the first tumor observed was in the frontal bone. This was removed and histologically found to have the structure of normal thyroid. The patient was again seen after an interval of six months, but no recurrence was evident. After about a year there was a recurrence and also other similar tumors made their appearance, one in the temporal region and one at the sterno-clavicular articulation. Clinically these tumors were considered to be malignant. At the request of the patient the one in the temporal region was removed. This presented a similar structure to the one removed from the forehead one year before. The patient died a few weeks later. Before death a thickening of the under half of the right lobe of the thyroid was noted. A complete autopsy was not permitted, but all visible tumors were removed together with the thyroid gland. Within the substance of the right lobe of the thyroid was found a small nodular thickening 2 cm. in diameter. The remainder of the thyroid appeared normal. The tissues were all carefully sectioned and examined, the authors expecting to find carcinomatous degeneration, but the structure throughout the tumor of the thyroid and the other isolated tumors of the head and neck were uniformly the same, and as they observe had the exact structure of normal thyroid tissue. They regard the small thyroid nodule as the primary tumor and the tumors of the head and neck as metastases.

Etiology.—The fact that we have in these metastatic tumors structures similar or almost identical to the tissue found in the normal gland lends special interest in the etiology of these tumors. In its consideration several factors may be taken into account.

First, Origin from *misplaced embryonal tissue*. The theory which has been advanced by Conheim in which he regards the etiology of malignant growths as due to misplaced embryonic cells might be applied to tumors of this class.

Second, Origin from *aberrant or accessory thyroid*. Murphy in a recent article² calls special attention to a group of accessory thyroid glands which he frequently finds at the base of the tongue and which he classified as the superior group. He records

¹*Centrab. f. allg. Path. u. path. Anat.*, 1903, xiv, 84.

²*Jour. of the Amer. Med. Assoc.*, 1905, xlv, 1854.

39 cases. In only three is there a note upon the histology of the tumor. Two presented the appearance of "normal thyroid," and one of "colloid goitre." In six, or 15 per cent of the cases, there was recurrence after removal but no other signs of malignancy.

Third, *Propagation of bits of thyroid tissue through the circulatory system.* It is a well-known fact that certain tissues, especially young embryonal cartilage, when transplanted into different tissues of the body or when injected into the circulatory apparatus are apparently nourished and in certain instances continue to grow. An apparently analogous condition is true in regard to the thyroid-gland tissue. Portions of this gland have been excised and immediately transplanted into another animal of a foreign species. The tissue not only has remained alive but has apparently continued to produce its normal secretion. Although no proof is at hand, it is possible that these metastatic tumors could result from small particles of thyroid tissues which had found their way into the circulatory apparatus and had been transferred to distant portions of the body. In an organ as vascular as the thyroid such a condition is not inconceivable, especially under conditions of trauma.

As is well known metastases from tumors of the thyroid, like those of the prostate, occur most commonly in bony structures.

VI.—EXOPHTHALMIC HYPERTROPHY. SIX CASES. ALL FEMALES.

No.	Age of onset.	Age at operation.	Duration.
1.....	28	29	16 months.
2.....	25	26	1 year.
3.....	20	21	1 year.
4.....	24	27	3 years.
5.....	28	43	15 years.
6.....	44	46	2 years.

Average age of onset, 28; average age at operation, 32; average duration of disease, 3 years and 10 months.

Result.—In two cases death occurred, one (case No. 3) on the table at the end of operation as a result of the anæsthetic; the other (case No. 2) died seven days after operation, with the symptoms of extreme hyperthyroidization. The remaining four cases have been either entirely cured or greatly benefited by the operation. Case No. 1, four years after operation, is well and

all the symptoms have been relieved except slight prominence of the eyes which remains. The portion of the gland that was left at operation is now distinctly palpable. Case No. 4, one year and two months after operation: the symptoms are all relieved and the patient is able to pursue his work. Before operation exophthalmus, tachycardia and nervousness were marked. Case No. 5 is well ten months after operation. Case No. 6: operation was done but one month ago. The condition of the patient is improved.

CASE XVIII.—(Path. No. 64-25.) Female, married, aged 26. Complaints of enlargement of neck, poor sight and some difficulty in breathing. Onset one year ago; first symptom enlargement, followed by exophthalmus. Thyroid gland now presents symmetrical enlargement; exophthalmus very pronounced, marked tremor of hands. Systolic murmur heard over base of heart; not transmitted. Heart not enlarged. Pulse 140.

Operation, June 24, 1903, by Dr. A. Vander Veer. Ether anæsthesia. Both right and left lobes were removed. For three or four days after operation the pulse ranged between 130 and 158, temperature between 100 and 102° F. Delirious at intervals. Death on the seventh day.

Pathology.—The gross description merely contains the statement that the specimen consisted of two masses of glandular tissue, one measuring 8x4x2 cm. and the other 5x4x1.5 cm.

Microscopic Examination.—(See Fig. 3.) Sections 1, 2 and 3 all show the lobulated structure of the thyroid gland. There is an increase in the interlobular connective tissue. The vesicles composing the lobules are very irregular in size and shape. The colloid material in many of the vesicles has been entirely replaced by epithelial cells. Instead of a single layer of epithelium lining the individual vesicles, we see a number of layers, this proliferation of cells often producing invaginations or papillary projections into the cavity of the vesicle. In certain areas this proliferation of cells has advanced to such an extent as to completely fill the vesicle and we have entire lobules presenting a solid cellular structure. The cells are of a high columnar type. There is lymphocytic infiltration in areas.

Microscopic Diagnosis.—Advanced and diffuse exophthalmic hypertrophy.

CASE XIX.—(Path. No. 763.) Female, single, aged 21. Enlargement of thyroid for one year, more marked on right side. Exophthalmus, tremor and tachycardia pronounced. As patient steadily grew worse under medical treatment, operation was advised.

Operation, September 28, 1904, by Dr. Elting. Ether anæsthesia. Excision of right lobe and isthmus. Left lobe not removed. The patient died on the table at the end of operation.

Pathology.—Macroscopic Examination: Specimen consists of two pieces of tissue, measuring respectively 6x4.5x3 cm. and 3x2.5x2 cm. in size. Both are of similar structure. The larger is somewhat lobulated and is encapsulated except on one surface, near the upper pole, where there is

a raw granular surface corresponding in diameter to the smaller piece. Both masses are more or less nodular and on section have a pinkish white granular appearance. There are several cysts 0.5 to 1 cm. in diameter containing straw-colored grumous fluid. The surface presents rather round or oval areas, each being somewhat distinct from the other.

Microscopic Examination.—The sections present an unusual picture for exophthalmic hypertrophy. They have in general a definite lobulated glandular appearance. In many lobules the proliferation of epithelial cells has progressed to such an extent as to entirely obliterate the characteristic thyroid gland structure, giving solid epithelial masses. The walls of the individual vesicles have disappeared, evidently as a result of pressure. In one such area (see Fig. 4) there is in addition an unusual change in the cell morphology. As seen in the microscopic drawing, the cells are very large and irregular in shape and in this regard suggest very strongly malignant transformation. In one section, evidently representing the wall of the small cyst mentioned above, the hypertrophy is not so far advanced and hyperplasia of the cells with papillary projection or invagination of the epithelial layers into the cavity of the vesicle is seen, representing more the picture we recognize as that of exophthalmic hypertrophy. The colloid material except in a few places has disappeared. In the study of these sections one is impressed with the possibility of the association of exophthalmic hypertrophy and carcinoma.

CASE XX.—(Path. No. 05-1376.) Female, single, aged 46. For six years headache, extreme nervousness and dizziness at irregular intervals. Two years ago onset of exophthalmus, tachycardia and tremor. Four months later observed enlargement of thyroid gland. This enlargement is symmetrical and well marked.

Note on physical examination.—Patient is a rather slightly built woman, rather poorly nourished and anæmic. Areas of discoloration of skin on left cheek and backs of both hands. Exophthalmus definite but not of an extreme degree. Sight has failed rapidly. Pulse regular, of even tension, 96 per minute. On admission to hospital it is recorded as 90. Thyroid gland shows a nearly symmetrical enlargement, left lobe a little larger than the right, measuring about 8.5×5 cm. and is moderately firm.

Operation, December 29, 1905, by Dr. Elting. Ether; excision of left lobe and isthmus.

Pathology.—*Macroscopic Examination:* Specimen consists of what is apparently the left lobe and a portion of the isthmus of the thyroid gland, which have been removed in one piece. The outer surface has a pinkish-yellow mottled appearance. It is covered by a rather delicate fibrous capsule, which has been torn in places and adheres by firm hair-like adhesions. The surface has a distinct lobulated appearance, the lobules varying in size from 0.5 to 2 cm. Several minute cysts 1 to 2 mm. in diameter are seen upon the surface. The tissue has a rather firm feel, and is very nodular. Section has been made through one area where near the surface a cyst has been opened. This cyst is 1.5 cm. in diameter and contains some thick, viscid, translucent material. On section the cut surface presents a reddish-yellow mottled appearance. Lobulations are definitely seen. These vary in size from 1 mm. to 1 cm. and are of

PLATE V.

To Illustrate Dr. Beilby's Article on "Affections of the Thyroid Gland."

Albany Medical Annals, January, 1907.

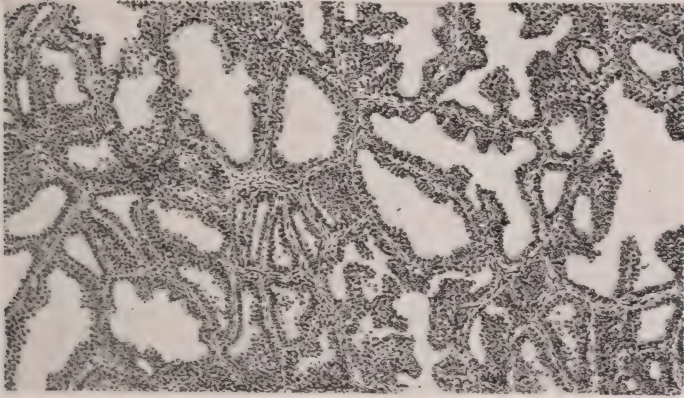


FIG. 3.—Microscopic drawing of an exophthalmic hypertrophy (exophthalmic goitre), 4 oc., 3 obj., Leitz.

In this drawing the hypertrophy is indicated by the proliferation of the epithelial cells lining the vesicles and the papillary projections into their lumen. In places some of the vesicles have been compressed by the hypertrophy of the surrounding epithelium.

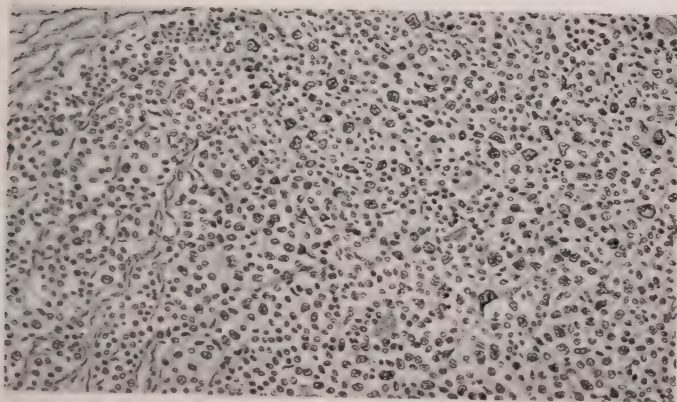


FIG. 4.—Microscopic drawing of a section of thyroid which presents in other areas a definite picture of exophthalmic hypertrophy, 4 oc., 3 obj., Leitz.
(See microscopic description.)

widely different shape. The connective-tissue surrounding the lobules can be seen as distinct white bands. It seems more abundant near the center and in the posterior part. Within the lobules can be seen minute translucent areas, which presumably are thyroid vesicles filled with colloid. The entire lobe as far as determined by section has this appearance. In the isthmus are areas of a more distinct red appearance. The lobules are firm and definite translucent areas cannot be seen. The appearance here approaches more nearly that of normal thyroid tissue.

Microscopic Examination.—A series of sections show two definite processes. There is seen to be in the majority of the sections a marked increase in the size of the alveoli and in the amount of colloid present. In certain lobules this is much more pronounced, and suggests a simple hypertrophy, differing perhaps only in the tendency of the cells to assume a higher type in many of these large colloid alveoli. In other areas there is cellular proliferation with diminution or disappearance of the colloid material. The increase in the number of epithelial cells is very great while their approach to the columnar type is not so marked. An alveolar arrangement is frequently difficult to make out. Section through the wall of the small cyst, noted above, shows it to be in the center of a minute encapsulated adenoma. The connective tissue of the gland is moderately increased in amount and there is considerable lymphocytic infiltration in areas.

It seems, then, that we may recognize two forms of exophthalmic hypertrophy; in the one form the disease begins in an apparently normal gland and the process is symmetrical, so that histologically we find everywhere the type of lesion so well illustrated in Fig. 3. Clinically in this form we recognize as a rule a very symmetrical enlargement of the gland, though one which never attains great size. The disease is of comparatively short duration, patients dying as a rule in from one to three years if untreated. The well known symptom-complex of the disease,—enlargement of the gland with exophthalmus, tachycardia and tremor,—is invariably present. In the other form the exophthalmic process is secondary or associated with some other type of thyroid affection. In three, or one-half, the cases in this series an associated simple colloid hypertrophy was found. The cases in this series illustrating this type are Nos. 4, 5 and 6.

This form is characterized clinically by a longer duration, by a greater increase in the size of the gland, and by lesser severity of the symptoms. These cases, however, all had exophthalmus, tachycardia and nervousness of greater or lesser severity. In Case V, while the enlargement of the gland was of 15 years' duration, the symptoms of exophthalmic goitre had developed more

recently. In the other two cases these symptoms were present from the onset.

The histologic picture also differs. Instead of a uniform process, as in the former group, we see the exophthalmic hypertrophy only in foci or in various lobules scattered throughout the gland. In the cases where this hypertrophy is observed it is of a lesser degree. Other investigators have also recently called attention to the fact that exophthalmic hypertrophy is frequently associated with various pathologic conditions of the thyroid, as cysts, adenomata and carcinomata, and that these may be the unproduced atypical exophthalmic goitre symptoms. Usually there is present the nervousness, tachycardia and tremor of varying degree while the symptoms of exophthalmus may be wanting.

In typical cases of exophthalmic goitre, which present the well-known symptom-complex, all writers agree that the histologic changes found in the gland are definite and constant. They have been characterized as a true hypertrophy. They very closely resemble the compensatory hypertrophy which is seen in the remaining portion of the thyroid gland after its partial excision, and which in this manner has been so frequently produced experimentally in dogs. Briefly the changes are (1) a change of the epithelium from a low or cuboidal type to a high cylindrical form, (2) a gradual disappearance of the colloid material which seems to be one of the earliest evidences of beginning hypertrophy, (3) alteration in the size and form of the alveoli due to the hyperplasia and infolding of the epithelium, (4) increase in the vascular supply and in the connective tissue stroma.

As we have noted, however, in cases in which symptoms are atypical no such definite changes are observed. We may see only in foci evidences of this process. It may amount simply to a change in the size and form of the cell, and perhaps instead of a single layer of epithelium lining the alveolus there may be two or more. There may be said to be, however, in all cases evidence of proliferation of cells with increased activity. Whether or not we shall be eventually forced to the conclusion that all the various affections of the thyroid gland characterized by cellular proliferation give rise to the symptoms, more or less complete, of Graves' disease is a matter which requires further study.

As to the pathogenesis of this affection nothing can be said to have been as yet definitely established. The main dispute is still whether the disease is of nervous origin or has its basis in an

abnormal condition of the gland itself. The majority accept the latter view, and hold that the disease is a manifestation of an excessive or perverted secretion of the thyroid epithelium. This seems the most rational supposition and it is borne out by certain facts,—viz., the similarity in the histology of the compensatory hypertrophy and the exophthalmic variety; the relationship between the advancement of the hypertrophy and the duration and severity of the clinical symptoms; and the beneficial effects that are produced by removal of a portion of the hypertrophied gland. What relation if any the parathyroids have to exophthalmic goitre has not been determined. In none of these cases were these bodies examined. The changes that have been described are not at all constant.

In regard to the age of onset, the cases of this series correspond closely with those of other observers. By far the greatest number appear between the ages of 20 and 30, five out of six cases are recorded above. In one case, however, the age of onset was stated as 44. An onset before puberty or after 40 is rare. The disease is much more common in females than males, the proportion as variously stated ranging from 3 to 1 to 17 to 1.

VII.—CHRONIC THYROIDITIS. ONE CASE.

CASE XXI.—(Autopsy No. 0-283.) Autopsy, April 18, 1900, by Dr. Blumer. Female, aged 40. No clinical history.

Anatomical Diagnosis.—Sclerodema with pigmentation of the skin affecting the face, posterior part of the trunk and extremities. Acute sero-fibrinous pericarditis, with acute myocarditis and diffuse interstitial myocarditis. Double hydrothorax with acute fibrinous pleurisy on the left side. Acute bronchitis with emphysema of the lungs and atelectasis of the lower lobes. Chronic passive congestion of the liver. Acute infectious nephritis. Chronic interstitial thyroiditis. Chronic interstitial mastitis. Tuberculosis of a bronchial lymph-gland. Small ulcers over the internal condyles of the humeri.

Pathology.—*Macroscopic Examination:* The thyroid gland is small, firmer and somewhat grayer in color than normal. It contains apparently an increased amount of connective tissue.

Microscopic Examination.—Marked changes in the gland are seen. These take the form of a great increase in the interstitial tissue of the organ, producing compression and atrophy of the glandular substance. The new-formed connective tissue is mostly in the form of a dense, fully-formed fibrous tissue, but there are areas in which the thyroid tissue is infiltrated with small, round, lymphoid cells, apparently representing a recent infiltration. There is an increase in the elastic tissue. The gland substance shows varying degrees of compression. In some places it has almost entirely disappeared over quite wide areas; in other places it is

apparently but little affected. There is an abundance of colloid material in the slightly affected areas.

Microscopic Diagnosis.—Chronic interstitial thyroiditis.

This case is not introduced into this series to raise the question of the relation of the thyroid to the condition of scleroderma, but as a typical illustration of the pathologic changes produced in the gland by a chronic inflammatory process. Acute inflammation of the thyroid gland frequently occurs following acute general infections, as typhoid and the exanthemata. The chronic form is very often associated with other thyroid affections, the hypertrophies, cysts and tumors, and they present in varying degrees the condition here described.

VIII.—TUBERCULOSIS. TWO CASES. ONE MALE, ONE FEMALE.

No.	Age of onset.	Age at operation.	Duration.
1.....	40	42	2 years.
2.....	35	43	8 years.

In the first case the previous health of the patient was said to have been good, but death from pulmonary tuberculosis occurred six years after the operation. In the second case the history at about the time of the onset of the thyroid involvement suggested pulmonary tuberculosis. The patient now (two years after operation) is in good health and presents no evidences of active tuberculous disease in any organ.

CASE XXII.—(Path. No. 64-2.) This case I am able to report as tuberculosis of the thyroid only upon clinical evidence, as although the microscopic sections show tuberculosis granulation tissue no thyroid structure can be made out. The patient was a male, aged 42. The disease began two years before with a small "lump" in the region of the thyroid gland which gradually increased to the size of a walnut, suppurated and discharged spontaneously, leaving two small sinuses which have persisted for a year. At the operation by Dr. Macdonald the sinus tracts were found to lead down to the thyroid gland and they were excised together with the gland in one mass. Clinically, as recently related to me by the operator, the process had its origin in the thyroid gland.

Pathology.—**Macroscopic Examination:** The specimen consists of a piece of tissue about one-half the size of a hen's egg. It contains some tissue which is presumably thyroid gland, and leading into it from the surface of the specimen are two sinus tracts, the walls of which are extremely ragged and lined with yellowish purulent material. *Bacteriologic examination* fails to show tubercle bacilli.

Microscopic Examination.—No thyroid tissue is to be seen. The sec-

PLATE VI.

To Illustrate Dr. Beilby's Article on "Affections of the Thyroid Gland."

Albany Medical Annals, January, 1907.

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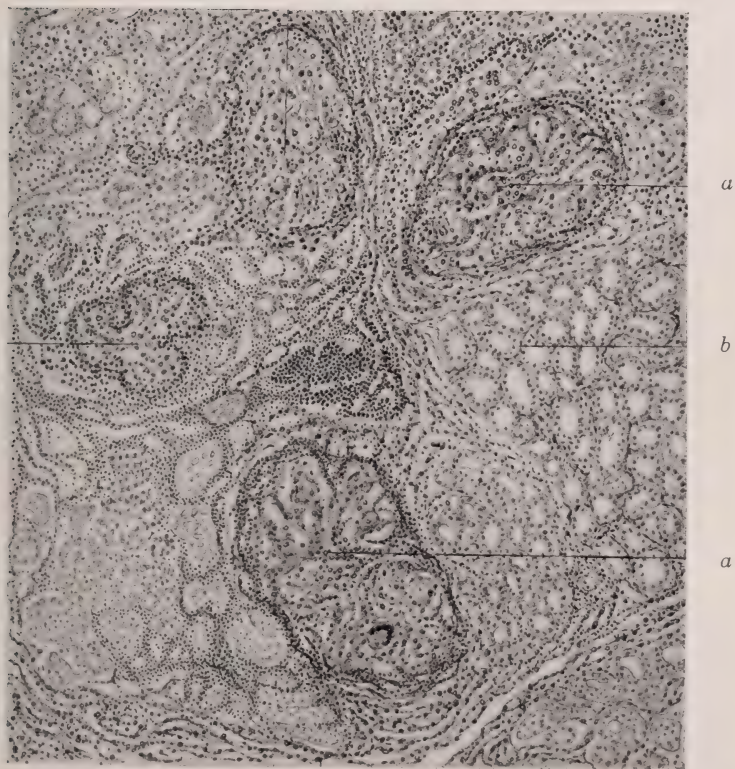


FIG. 5.—Microscopic drawing of tuberculosis of the thyroid gland, 4 oc., 3 obj., Leitz.
(a) Tubercles, in the lower one of which is seen a giant cell. In the centre of the drawing, between the tubercles, is an area of lymphocytic infiltration. (b) Normal thyroid tissue.

tion consists of connective tissue and of large areas of caseation. Surrounding these areas of caseation is typical tuberculous granulation-tissue, made up of epithelioid and lymphoid cells, and containing an occasional giant cell.

CASE XXIII.—(Path. No. 64-21. History taken and physical examination made December, 1905, two years after operation.) Female, aged 45. When 14 years of age parents thought she had consumption; but, if so, she recovered completely. She married at 21 and now has 7 children, all in good health. At birth of last child, 11 years ago, she had puerperal fever and was seven months in bed. After this had a severe cough, night sweats and considerable expectoration. During this illness her physician first noticed a small tumor in the median line of the neck in the region of the thyroid gland which gradually increased till two years ago, when it reached the size of a hen's egg. It was tender on pressure and sometimes painful and caused some dyspnoea during the last year before operation. It never showed redness or signs of inflammation. The patient entered hospital at this time for an operation for uterine myomata and she was persuaded by the surgeon to allow removal of this enlarged portion of thyroid.

Operation, November 5, 1903, by Dr. A. Vander Veer.

Pathology.—*Macroscopic Examination*: Specimen consists of an irregular mass of reddish brown tissue 6x4x2.5 cm., in which lies a sausage-like mass. This latter on section is found to be of a uniform consistency and of moderate firmness. Color is slate brown and deviating striæ give to the cut surface a lobulated appearance.

Microscopic Examination.—(See Fig. 5.) The thyroid tissue shows marked proliferation of alveoli, the majority of which are massed together, making the outlines of individual alveoli indistinct, while others contain a moderate amount of colloid material. In many of the lobules are circumscribed masses of epithelioid cells with occasional giant cells and a peripheral ring of lymphocytic infiltration. But a few of the tubercles show early caseation.

Microscopic Diagnosis.—Tuberculosis of the thyroid gland.

The patient was seen in December, 1905, 2 years after operation and this note on her present condition was made: "Patient is fairly well nourished, but slightly anæmic. There is a linear scar in the median line of neck 7.5 cm. in length, extending from a little beneath the chin to the episternal notch. Aside from a little thickening and redness at its lower end the scar appears healthy. There is no apparent enlargement of any portion of the thyroid gland. Patient has no cough and states that she is in good health and able to pursue her work. Examination of the lungs reveals no evidence of disease, though the breath sounds at both apices and considerably subdued. There is no glandular enlargement anywhere."

While it is true that tuberculosis of the thyroid gland is a rare disease, from recent studies it has been demonstrated that it is not so rare as was formerly supposed. Thus P. Bruns¹ in his

¹*Beiträge zur klin. Chir.*, 1897, xi.

report of 100 postmortem examinations made by Chiari of persons who had suffered from tuberculosis, states that the thyroid gland was involved in seven. Of these cases 96 had suffered from chronic pulmonary tuberculosis, and in only four of these was the thyroid gland involved; the other four were cases of acute miliary tuberculosis, and in three of these the gland showed involvement. Weigert in fifty cases of chronic pulmonary tuberculosis found tuberculosis of the thyroid in six. Two forms of involvement are recognized; a miliary form secondary to a general miliary tuberculosis, and a nodular form affecting the gland diffusely. The former is the more common. It does not produce any enlargement of the organ as a rule. Of the nodular form Bruns was able to collect six cases besides his own; in three of these from a clinical point of view the thyroid lesions were primary. This form is attended by enlargement of the organ sometimes sufficient to produce pressure symptoms. As illustrated in Fig. V, these tubercles have the ordinary characteristics of tubercles in other organs. They probably always arise in the interstitial connective tissue separating the vesicles.

In the first case here recorded the data is so incomplete that no definite conclusions can be drawn. The clinical history states that the patient's previous health had been excellent, but there is no record of a physical examination to exclude a possible pulmonary involvement. Then the fact that he is said to have died four years later of pulmonary tuberculosis leaves us in doubt as to whether the disease was primary in the thyroid with secondary involvement of the lungs or *vice versa*.

W. B. Stanton¹ has recently made the important observation that in a comparatively large number of cases of pulmonary tuberculosis there were symptoms more or less complete of exophthalmic goitre and in these cases he has been led to examine the thyroid glands. The report is only a preliminary one and no cases in which he has observed these symptoms have died. He could not therefore give the results of histologic examination. Clinically there was slight thyroid enlargement. He records 26 cases of pulmonary tuberculosis aside from the above in which the thyroids were examined postmortem, but in which the patients were not examined clinically for those signs. In these, tubercles were found in four. As serial sections were not made he thinks it probable that the proportion found to contain tubercles is much

¹American Medicine, 1905, x, 605.

too small. Further investigation of this point might yield information of great value.

IX.—CARCINOMA. ONE CASE.

CASE XXIV.—(Path. No. 98-43.) Female, aged 36, with history of illness for last three years. Prominent symptoms are enlargement of thyroid gland, with pain and anæmia. The patient was operated upon two years ago for thyroid enlargement, but no pathologic study of this specimen was made.

Second operation by Dr. A. Vander Veer, February 18, 1899.

Pathology.—*Macroscopic Examination:* Specimen consists of six masses of tissue, all roughly lobulated and varying in size from 6 to 3 cm. in greatest diameter. They all present similar appearances and are not distinctly encapsulated, though portions of capsule are here and there evident. Where a capsule is present it is generally smooth and of a yellowish-red color. The portions of the growth which are uncovered by capsule are finely lobulated, of a light yellowish-brown color, and have a translucent appearance. This appearance suggests, in some places, the appearance of thyroid-gland tissue; in other places it has a myxomatous character. On section the nodules differ in appearance; the smaller and presumably the younger ones have an almost homogeneous yellowish-gray cut surface, which is covered by sticky mucilaginous fluid which has the glistening appearance of mucoid tissue. In one or two of the smaller masses are areas of hæmorrhage. In one rather large area of light reddish-brown tissue which does not look like hæmorrhage, there is an area homogeneous in character and slightly granular. In two of the largest nodules near the center are areas of necrosis and calcification.

Microscopic Examination.—Sections from two different portions show an adenomatous tissue divided into irregular lobules by rather dense fibrous connective-tissue septa, which extend inward from a capsule which is present at one side. Except in a few small lobules near the periphery, where characteristic colloid-containing vesicles are seen, the tissue could not be recognized as thyroid-gland tissue. It is composed of papilloma-like projections and long epithelial tubules with cavities of thyroid-gland spaces. This arrangement becomes complex and branching as the process develops, until they finally fill up the cavities, producing a gland-like appearance. The epithelium rests upon no visible basement-membrane; the stroma is very scanty. In the connective-tissue septa are many solid epithelial clumps which probably represent new foci of growth.

A section from the homogeneous mass differs only in that no connective-tissue septa are seen, and the spaces are more closely packed with epithelial cells. This section also shows acute inflammation. The epithelial cell is of a high cylindrical type, varying greatly in size and shape.

Microscopic Diagnosis.—Adeno-carcinoma of thyroid gland.

From one observation of carcinoma of the thyroid no important deductions can be made except to call attention to its relative infrequency. One case in 61 thyroid affections, as indicated by

this series is, however, undoubtedly too low a proportion and not borne out by the statistics from other sources. Bloodgood¹ in exactly twice the number of cases records seven of carcinoma. The most elaborate study of this condition that has appeared is by Ehrhardt,² who has collected 150 cases of carcinoma. Sixty-five of these occurred in men and eighty-five in women; 111 appeared between the ages of thirty and sixty. In over 50 per cent. of these cases it was definitely stated that a simple goitre preceded the development of the carcinoma, and in only a comparatively small number that it arose in a normal thyroid. This is the reverse of the condition seen in this country, probably due to the fact that we have no "goitrous districts," Ehrhardt recognizes three main varieties,—the medullary, which is the most frequent, the adeno-carcinoma, and the scirrhus. The latter is, in his experience, rare. Metastases occur early as a rule. In ninety-four bodies examined metastases were found in all but fourteen. In forty-six cases twenty-three had metastasized by the bloodstream alone, nine by the lymphatics alone, and fourteen by both these channels. As to the location of metastases, the lungs and bones are the most frequent seats. The bones of the skull and inferior maxilla are most commonly involved, though the sternum and long-pipe bones do not escape.

The average duration is about two years, the scirrhus form being the most chronic.

Clinical Diagnosis of Thyroid Affections.—When we bear in mind that the symmetrical enlargement of the thyroid gland indicates a hypertrophy, and the asymmetrical a tumor or a cyst, we have gone a great way towards making a diagnosis. To characterize all of the enlargements of the thyroid as "goitre" is obviously improper, as it conveys no intelligent clinical or pathologic meaning. If this term is used, it should apply to the hypertrophies, and we can then properly speak of the simple goitre and the exophthalmic goitre. To differentiate these latter conditions clinically is not difficult, for in exophthalmic goitre the subjective symptoms are definite and constant. In the simple form the rule is a much greater increase in the size of the gland but no symptoms except those produced locally by pressure. The age of onset and the duration of the disease are also important aids in diagnosis, as has been shown in the preceding tables. In

¹*Surgery, Gynecology and Obstetrics*, 1905, i, 113.

²*Beiträge zur klin. Chir.*, 1902, xxxv 343.

the simple hypertrophy the age of onset in a large proportion of cases is before twenty. In an accurately recorded history I believe it would be exceptional to establish an onset after twenty-five. In the exophthalmic variety an onset before twenty is extremely rare; the majority of cases appear between the ages of twenty and thirty. The duration of the disease in the simple form is much longer, often twenty or thirty years, while that of the exophthalmic hypertrophy is usually less than two years. Where these two conditions are associated, or where the exophthalmic hypertrophy appears secondary to other thyroid affections, greater variation in these respects is seen. We must bear in mind that in either form of hypertrophy the process in one lobe may have advanced further than in the other, producing an asymmetrical enlargement, but on the other hand no part of the gland appears normal. In other words the process is a diffuse but not always an uniform one. Again, we have seen in certain cases a fairly symmetrical enlargement produced by an adenoma or cyst in either lateral lobe. These multiple tumors are comparatively rare, however, and on close examination present distinctive features. Of the tumors, the cysts and the adenomata are the most frequent, and they are often very difficult to differentiate. They both present the features of encapsulated tumors. The cysts are more apt to be smooth and ovoid in shape, while definite lobulations can often be made out in the adenomata. Variation in the size of the tumor seems to be frequent in the case of cysts. In regard to the recurrent adenomata, two of our observations at least would point to their being of a mild type of malignancy. Considering the long duration, however, and the fact that no metastases occurred, they do not present the features of carcinoma of the thyroid. In one case a secondary growth appeared in the region of the primary one.

From the fact that metastases of the thyroid tissue occurs in cases in which no primary tumors of the gland has been noted, bone tumors looked upon as primary should be approached with this possibility in mind.

Early diagnosis of the carcinomata presents the greatest difficulties and obviously is of the greatest importance. Age here is to be considered as indicated by the statistics of Ehrhardt. The disease is usually of short duration, a few months to one or two years. As met with in this country, carcinoma of the thyroid does not produce a large tumor, but it rapidly infiltrates the gland

and surrounding tissue and dyspnoea and dysphagia are early symptoms and out of proportion to the size of the growth. Change in the voice is also an early observation (Bloodgood). In districts where simple hypertrophy is endemic a very large proportion of the cases of carcinoma, as recorded by Ehrhardt, are secondary to this condition. Here the important feature is a sudden increase in size in the hypertrophied organ, with the return of symptoms after a quiescence of perhaps many years. Primary sarcoma of the thyroid is a rare affection and as no cases were observed in our series the condition will not be discussed.¹

Treatment.—As the symptoms in the uncomplicated cases of simple hypertrophy and benign tumors are of a mechanical nature, the severity of these symptoms has been our guide in treatment. Rarely is operation undertaken for the relief of the deformity alone. I believe, however, that since so large a number of these cases undergo secondary changes in later life, making operation imperative, that they should be considered upon the same basis as similar lesions in other organs. In the case of the tumors and cysts an early operation is advocated. With the simple hypertrophy, if the patient has passed young adult life, the period when we might expect a subsidence of the process, and the gland continues to enlarge, a portion of it should be removed. If after a quiescent period new growth is observed, operation may be necessary for the relief of urgent pressure symptoms, and here, too, carcinoma must be considered. Scarcely fifty years have passed since Dieffenbach considered thyroidectomy a rash undertaking. To Kocher more than anyone else is due the credit of the advances in this field of surgery. At the German Surgical Congress, in 1900,² he reported the results of his second thousand cases of thyroidectomy, of which 929 were upon cases of simple hypertrophy and benign tumor. He had only four deaths, giving a mortality of 0.4 of 1 per cent. The greatest single factor contributing to this low mortality-rate was undoubtedly the substitution of local for general anæsthesia.

The general principles which guide us in the treatment of carcinoma of other organs should apply here, remembering that metastases occur early. Operation to effect a cure must be un-

¹For report of cases and statistics see Lartigau (*Amer. Jour. Med. Sciences*, 1901, cxxii, 156).

²*Archiv. für klin. Chir.*, 1900, lxiv, 454.

dertaken before there is extensive invasion of the surrounding tissues.

In the treatment of exophthalmic goitre the various drugs and methods employed are almost innumerable. The weight of opinion now seems to favor partial thyroidectomy, and I believe justly so, for with the accumulating statistics the percentage of cures is increasing and the number of primary deaths decreasing. No other form of treatment has offered so much hope. The observations in this series have been made entirely on the operative treatment, but to give an opportunity for comparison I may be allowed to quote from a review of the literature made recently by the writer,¹ in which the results of some of the other more recent methods of treatment are recorded. In late years attempts have been made in many German clinics to develop a specific treatment of exophthalmic goitre. Lanz,² as early as 1894, began the use of the milk of thyroidectomized goats in patients with Graves's disease. He has recently recorded favorable results in five cases. Burghart and Blumenthal³ in Leyden's clinic have injected the blood-serum of amyxo-œdematous patients into those suffering from exophthalmic goitre. Leyden reviews their results and thinks they are encouraging. Later, in this clinic, was introduced the use of a precipitate from the milk of thyroidectomized goats, called "rodagin." A few cases are recorded of slight improvement after continued use of this substance. Kollaritis reports no improvement in three cases in which he employed this method.

Moebius and Schultes⁴ have used the serum of thyroidectomized sheep. This serum is called *antithyroidin*. Moebius reports three cases somewhat improved by this treatment and later two other cases which were benefited. Schultes and Rosenfield have likewise each reported a case. In a recent communication Moebius⁵ speaks rather guardedly of the employment of this serum. Kuh,⁶ after treating eleven cases with the serum, is unwilling to make any statement as to its curative effect. He thinks it relieved nervousness and diminished tachycardia.

In regard to the operative treatment, in four of our six cases

¹Albany Med. Annals, 1906, xxvii, 111.

²Münch. med. Wochenschr., 1903, l, 146.

³Deutsche med. Wochenschr., 1899, xxv, 627.

⁴Münch. med. Wochenschr., 1901, xviii, 1873.

⁵Münch. med. Wochenschr., 1903, l, 146.

⁶Medicine, 1905, xi, 672.

the partial excision of the thyroid gland has been attended with excellent results. In two of these all the symptoms have been relieved; in one the operation was of too recent date to determine the ultimate result, but the symptoms one month after operation improved in all respects; in the other all the symptoms except exophthalmus had disappeared, and the patient is able to pursue her work. The time now intervening since operation varies from one month to four years, as shown in the table. Of the two deaths one could be ascribed to the anæsthetic, and the other, in which death took place on the eighth day with the symptoms of extreme hyperthyroidization, as a late case probably beyond possible recovery. It should be borne in mind that the operative treatment, to be of the most value, should be undertaken early, before damage has been done to the nervous system. In this condition even more than in other forms of thyroid affections, the importance of local anæsthesia cannot be too highly estimated. As further proof of the superiority of the operative treatment, the statistics of a number of observers are quoted. The best results of partial thyroidectomy yet published are those of Kocher—59 cases: 75 per cent. cured; 17 per cent. improved; 6.7 per cent. dead.

At the last German Surgical Congress, April, 1905, Friedheim from the clinic of Kümmel reported the results of twenty cases of partial thyroidectomy after five or more years had elapsed. Fourteen were cured, two much improved, three slightly improved, and one had died. In seven of the cured cases the operation had been performed nine or more years previous; in one, fifteen and a half years. He further presents the statistics of the other large German clinics for the last years as follows:

	Cases.	Cured.	Improved.	Dead.
Von Mikulicz	18	10	7	1
Krönlein.	24	16	6	2
Kocher.	59	45	10	4
König	8	4	..	1

SUMMARY.

In the study of this series of cases especial emphasis is directed to the following points:

I. Simple colloid hypertrophy is the most common affection of the thyroid gland. In a large percentage of cases this hypertrophy is temporary, representing, apparently, a physiological

process, taking place in early adult life, and later there is a return of the gland to its normal condition. This early hypertrophy may be permanent, and in addition there may be a return of the secretory activity of the cells together with the formation of new thyroid tissue. This latter process often simulates clinically a malignant transformation.

II. Adenoma of the thyroid is by no means a rare affection. Its differentiation from simple colloid hypertrophy is readily made, both from a clinical point of view and from a macroscopic examination of the specimen. While the histologic structure of the two lesions are similar, careful examination reveals determining points of difference. The various types of adenomata, differ only from a histologic standpoint; this difference being due entirely to the secretory activity of the cells of the individual vesicles. The adenomata may occur singly or as multiple tumors of one or both lobes. Recurrence after removal is occasionally observed in tumors which from a histologic point of view, at least, are adenomata.

III. Hæmorrhage as a true etiologic factor in the production of cysts of the thyroid gland, is uncommon. By far the greatest number of cysts of the thyroid are produced by a degeneration of adenomata. The walls of these cysts we find composed of a histologic structure which exactly corresponds to one or the other of the types of adenoma. Secondary changes in the cyst walls are common, and are the result of compression and degeneration.

IV. Thyroid tumors may occur, which histologically present none of the indications of malignancy, but which clinically must be considered as such. These tumors occur outside of the thyroid gland, are probably metastatic, and usually appear in bony structures, the gland itself presenting at least no clinical evidence of primary involvement.

V. In exophthalmic goitre in addition to the type of the disease which presents a definite and constant clinical and pathological picture, there are other, so-called, irregular forms, which are associated with or occur secondarily to other thyroid affections, in which the symptom complex of Graves's disease is not complete, and the epithelial hyperplasia occurs only in foci and is of lesser degree.

VI. Tuberculosis of the thyroid, while a rare affection, is a possibility which must always be considered in diagnosis. The disease may occur in one lobe without involvement of the others,

and produce a tumor which clinically simulates an adenoma, and the condition though of long standing may present no visible indications of an inflammatory condition.

VII. Carcinoma of the thyroid is more common than indicated by this series. Outside of the "goitrous districts" carcinoma occurs most often in glands that are apparently normal, and here the type of growth is that of an adeno-carcinoma.

VIII. The diagnosis of the benign thyroid affections should as a rule present little difficulty. In contradistinction to the benign lesions carcinoma does not produce a large tumor and obstructive symptoms and infiltration of the surrounding tissues occur early.

IX. The treatment of thyroid lesions with the possible exception of exophthalmic hypertrophy rests entirely upon a surgical basis. Accumulating experience likewise tends to emphasize the superiority of partial thyroidectomy over the many other methods employed in the treatment of exophthalmic hypertrophy.

X. The risks of general anæsthesia are too great to commend its employment as a routine practice in operations upon the thyroid gland. All cases can be successfully dealt with under local anæsthesia, and the primary death rate reduced thereby greatly.

PUERPERAL INFECTION: REPORT OF SIX CASES ILLUSTRATING ITS VARIED CHARACTER.*

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(From the Bender Laboratory, Albany, N. Y.)

Puerperal infection, in spite of the increase in our knowledge of prophylaxis, is still the cause of the majority of deaths occurring in pregnancy and the puerperium, and remains, therefore, one of the most frequently discussed topics in obstetric literature. Although the pathology of the simpler or so-called "pure" forms of infection have been thoroughly described, the varied manner in which the disease may manifest itself has not been so generally understood. It seems, therefore, justifiable to add, to a subject of such perennial interest, a report of several cases studied both clinically and pathologically.

Puerperal infection differs from all other bacterial infections

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in that it occurs in organs whose anatomic relations and blood supply have been altered temporarily. This is of as great importance in determining the extension of the infection as is trauma in favoring the original infection. Autoinfection is to be considered also, not only as infection from organisms existing in some part of the genital canal, but also as infection which may be carried to the genitalia from some preexisting focus in a remote part of the body. Two cases of autoinfection from foci outside the genitalia are here reported. Intercurrent bacterial disease primarily nongenital must also be considered a factor in the causation of puerperal infection.

A few words concerning terminology may not be out of place, for the obstetrician is notoriously lax in his use of terms, *e. g.*, the frequent use of the term septicemia when only a toxemia exists.

In any discussion of infection we must consider on the one hand the local lesion and on the other the secondary manifestations. The local lesion is due to the toxic substance elaborated by microorganisms at the point of invasion; at the same time, these soluble substances pass into the general circulation and cause constitutional symptoms. The local lesion may be an abscess, a urethritis, or a pneumonia, etc.; in puerperal infection it is usually an endometritis. The constitutional symptoms constitute a toxemia and not a septicemia. The latter results only when the microorganisms themselves enter the blood stream and are distributed to all parts of the body. Needless to say an absolute diagnosis between toxemia and septicemia can be made during life only by the use of blood cultures. If, with the septicemia, we have the development of secondary abscesses, the condition then becomes a pyemia. Pyemic manifestations must, however, be distinctly separated from lesions of adjacent organs due to direct extension by continuity or contiguity. Thus we may have a streptococcus or other form of endometritis with toxemia or with septicemia; in the course of the latter pyemia may develop; or with either of the three conditions we may have local lesions due to direct extension of the infection. These terms include all possible forms of puerperal infection, but unfortunately, among surgeons and obstetricians the terms toxemia and septicemia do not receive their exact values.

Another stumbling block is the term sapremia, so frequently used for toxemia. Toxemia is now usually regarded as an intox-

ication resulting from the absorption of bacterial products. It is possible that an intoxication may be caused by substances elaborated in the bacteria-free destruction of tissue, but there is little positive evidence to this effect. By sapremia, obstetricians usually mean constitutional disturbances, as rise of temperature, pulse, etc., accompanying the retention of the products of conception. These symptoms are supposed to be due to the decomposition of the dead tissues by saprophytes with the production of the so-called "putrid endometritis." As the bacteriology of the puerperium has been more carefully studied, these cases of putrid endometritis are found to have as a basis, infection with those forms of pathogenic bacteria more difficult of isolation. This is shown by the recent investigation of Little,¹ who found *Bacillus aerogenes capsulatus* to be not infrequently present in the uterus; and also by the recent studies of gonococcus infection by Stone and myself at the New York Lying-in Hospital. It was found that the presence of the gonococcus explained a number of cases of toxemia with constitutional symptoms which would ordinarily have been classed as sapremia. It would seem advisable, therefore, to drop the old term sapremia and group these cases as toxemia from bacterial infection.

The cases* here collected illustrate some of the more unusual forms of puerperal infection both as regards the variety of causative organisms as well as the pathologic lesions.

CASE I.—*Streptococcic endometritis with septicemia; B. aerogenes capsulatus infection; acute yellow atrophy of the liver.* Records of New York Lying-in Hospital; Case No. 7,099; primipara; aged 25; pregnancy of seven months' duration.

History.—Vomiting of pregnancy was moderately severe at fourth month; but improved towards the sixth. Two days before admission the patient induced labor by passing a button hook into the uterus, rupturing the membranes. Labor pains began shortly after and the child was partially expelled on the evening of the second day. On entering the hospital the os was dilated and the child delivered. The uterus was irrigated and packed with iodoform gauze. Vomiting was incessant at entrance, and there was slight jaundice. The temperature on admission was 102°; pulse 140. On the following day the gauze was removed. Patient was restless and noisy, but rational; vomiting severe; no abdominal tenderness. Third day, slight stupor; vomiting and jaundice increased. Fourth day, profound coma; vomiting severe; vomitus stained with blood.

*I am indebted to Drs. Lipps, Lochner and Happel for the clinical histories of the cases from the Bender Laboratory and Drs. Painter and Stone, late attending physicians to the New York Lying-in Hospital, for permission to report two cases which occurred during my service under them.

Fifth day, comatose condition continued; incessant vomiting; conjunctivas deeply bile stained and hemorrhagic. Patient died.

Urine.—Analysis showed high specific gravity, a trace of albumin, a few blood cells, granular and hyaline casts and leucin and tyrosin.

Blood cultures were negative. Blood counts showed 3,950,000 red cells, 75 per cent. hemoglobin and 18,000 to 19,500 leukocytes. The latter were divided into small lymphocytes, 75 per cent.; large lymphocytes, 65 per cent.; polymorphonuclears, 86 per cent.

*Autopsy** by Dr. Martha Wollstein. The autopsy was performed six hours after death.

Body is that of a medium-sized woman, fairly well nourished; subcutaneous fat small in amount. There is slightly marked general icterus and a group of small subcutaneous hemorrhagic spots just below and to the left of the umbilicus.

Liver.—Not decreased in size. In the mamillary line it extended to the free border of the ribs. Weight is 1,900 grams. The liver as a whole was light yellow in color and firm in consistency. On the inferior surface of the right lobe there were areas which were softer than the rest of the liver substance, and a brighter yellowish green in color. The lobules were indistinct everywhere, the central veins being plainly visible, apparently distended, but the lobules around them are not clearly outlined. In the softer areas the lobulation is almost entirely lost. Glisson's capsule is smooth and glistening, with many small hemorrhages in and beneath it. The connective tissue septums are apparently not thickened. The branches of the portal veins are, for the most part, empty. Gall-bladder contains green fluid bile; the ducts are patent. The blood in the portal veins foams, but there are no holes in the liver substance.

Spleen.—Weighs 200 grams. Crackles on pressure. Dark red in color, soft, almost diffuent, and riddled with small holes.

Stomach.—Contents dark brown and fluidless. The mucous membrane is covered with blood-stained mucus and shows punctate hemorrhages, most numerous on the posterior surface.

Kidneys.—Normal in size; capsules free; cortex not thickened; markings blurred. In the boundary zone are many small hemorrhagic areas, contrasting sharply with the gray cortex and medulla.

Bladder.—Punctate hemorrhages of the mucosa near the trigone.

Uterus.—Sixteen cm. in length. Muscle is flabby and emphysematous, and peritoneal surface is normal. The endometrium is greenish black in color and gangrenous from the fundus to the lower border of the cervical lips. Attached to the mucosa at the fundus, to the left of the median line, is a mass of placental tissue which is gangrenous.

Anaerobic cultures were made from the liver, spleen and uterine wall. *Bacillus aerogenes capsulatus* grew from each of these organs.

Aerobic cultures from the liver and endometrium, gave growths of streptococci.

Diagnosis of acute yellow atrophy of liver was confirmed by histologic examination.

*Only those portions of the autopsy protocols pertinent to the subject under discussion are given.

Pathologic Diagnosis.—Puerperal uterus; gangrenous and emphysematous endometritis; general infection with *Streptococcus pyogenes*; acute yellow atrophy of the liver; pulmonary edema; chronic pleurisy.

CASE II.—Double pyonephrosis; pyoureter; *Staphylococcus pyogenes aureus* septicemia.

Bender Laboratory Records, autopsy 0-247.

Clinical history.—Primipara. Patient was sent to the Albany Hospital for irrepressible vomiting when 8½ months pregnant. She was much emaciated and weak. Temperature was 101°-102° at night and usually subnormal in the morning. The vomiting which had persisted for two weeks was controlled by purgatives, dieting and saline enemas; but the fever persisted. The urine showed a few pus cells but no albumin. Patient was delivered at term of a dead child. Temperature went higher after delivery and the patient died on the same day.

Autopsy by Dr. George Blumer.

Left kidney.—Measures 11x5.5x4 cm. The capsule strips readily. The surface of the kidney is pale and is dotted with purulent foci which extend into the kidney substance. On section kidney tissue is exceedingly pale. Occupying the pyramid in several cases are small abscess cavities from 2 to 12 mm. in diameter. These abscess cavities are surrounded by a distinct hemorrhagic zone. In some of the pyramids near the base can be seen minute pin-point opaque areas extending into the tubules. The pelvis of the kidney contains a small quantity of purulent material and the surface is somewhat hemorrhagic. The glomeruli are visible and the cortex measures 8 mm. in thickness. In numerous areas the infection can be seen extending up along the tubules. There is marked cloudy swelling. Left ureter slightly dilated.

Right kidney.—Measures 11x6x4 cm. Capsule strips readily; surface is pale and is studded with numerous small abscesses. There is one retention cyst, 1 cm. in diameter, on the surface. On section, the tissue of the kidney is very pale and is thickly studded with small abscesses which appear to extend up along the tubules and in places show large areas of necrosis. As in the other kidney, the abscesses are surrounded by a hemorrhagic area. The cortex measures 6 mm. The pelvis of the kidney is much dilated, contains a small quantity of purulent material and its mucosa is markedly hemorrhagic.

Bladder.—Contains about 60 cc. of turbid straw colored urine; beyond some congestion, its mucous membrane is of normal appearance. The right ureter just where it passes over the pelvic brim becomes markedly dilated and at a point near the kidney measures 2.75 cm. in diameter. Throughout the dilated portion the mucous membrane is dotted with hemorrhages and in some places clots have formed. On the left side, 12 cm. above the ureteral orifice, the ureter is dilated and measures .75 cm. in diameter, while near the kidney it measures 1.75 cm. in diameter. The mucous membrane is hemorrhagic in places. Both ureters in the region of their entrance into the bladder are of normal appearance.

Uterus.—Measures 16.5x11x8 cm. There are lateral lacerations of the cervix most marked upon the right side. The fundus of the uterus contains a considerable amount of clotted blood. The interior is much

roughened and the surface is exceedingly irregular. Uterine muscle is of normal appearance. The vagina is much dilated and the mucous membrane shows numerous small hemorrhages. Ovaries and tubes are normal. Placenta is normal.

Microscopic Examination.—Kidneys: The greater portion of the substance shows marked cloudy swelling. Scattered here and there through the organ, usually along the group of tubules, are areas in which the kidney substance is densely infiltrated with cells, both polynuclear and small round cells. Some of these cells are in the lumen of the tubules, others are between the tubules. Associated with these lesions is a certain amount of hemorrhage between the tubules and a considerable degree of necrosis of the kidney cells. In some places there has been an extensive breaking down of the kidney substance with the formation of abscesses. The vessels are in places plugged with bacteria.

Bacteriologic Examination.—Cultures were taken from heart's blood, liver, spleen, both kidneys, pericardium and a mesenteric gland.

Cultures from the mesenteric gland and pericardium were sterile.

Cultures from heart's blood, liver, spleen and both kidneys contained in pure culture the *Staphylococcus pyogenes aureus*.

Pathologic Diagnosis.—Infection of both kidneys with cloudy swelling. Dilation of both ureters with pyoureter. Slight pyonephrosis. Acute splenic tumor. Cloudy swelling of liver. Swelling of mesenteric glands. Slight arteriosclerosis. Persistent Meckel's diverticulum. Enlarged uterus just after labor. Infection of kidneys by *Staphylococcus pyogenes aureus*, associated with general infection of blood and organs with the same organism.

CASE III.—*Periuterine thrombophlebitis; cerebral thrombosis with purulent meningitis; pulmonary embolism; streptococcus infection; pyemia.*

Bender Laboratory Records, autopsy No. 0-554.

Clinical history.—Patient had an uneventful pregnancy until the seventh month. She then suffered from angina, which was relieved in two days by treatment with gargles and silver nitrate applications. She still suffered, however, from headache, photophobia, and restlessness; evening temperature elevated from one to two degrees.

Two weeks later, when, seven and a half months pregnant, premature labor occurred without intervention. At the termination of labor immediately after the placenta had been expelled spontaneously the patient suddenly complained of breathlessness, became cyanotic, and dyspneic, and died in less than two minutes.

Autopsy by Dr. George Blumer.

Heart.—Right side contains fluid blood and postmortem clots. Endocardium and valves are normal and the average thickness of muscle of right ventricle is 4 mm. Left side contains postmortem clots; endocardium, valves and coronary arteries are normal. Auricular appendages are empty and foramen ovale is patent but is protected by a semilunar flap. Heart muscle is pale and opaque.

Left lung.—Firmly bound down by old adhesions. It is crepitant and on section slightly edematous and congested throughout. Two of the

larger pulmonary veins contain antemortem thrombi. Bronchi show slight congestion of the mucosa.

Right lung.—Slightly adherent at the apex. It is crepitant and on section the upper and middle lobes are slightly congested and edematous. The lower lobe is markedly so. Vessels in this lung appear free from clots. Bronchial glands are slightly enlarged and pigmented.

Left kidney.—Capsule strips readily, leaving a smooth surface. On section the cortex is markedly swollen and pale, the markings are indistinct and glomeruli are scarcely visible. Veins contain fresh thrombi and a fresh thrombus is present in the main branch of the renal vein.

Uterus.—Measures 14x10x5.5 cm. The musculature is flabby, averaging 1.5 cm. in thickness and endometrium is rough; a mass of adherent material with the appearance of blood clot, is in the fundus over an area 5 cm. in diameter. The peritoneal surface is smooth. The tubes and ovaries are normal. Vaginal tissue about the cervix is cyanotic and shows a few hemorrhages. Veins in the broad ligament contain red and mixed thrombi, which are more numerous on the left side.

Brain.—Shows, on the surface, three distinct areas of softening. The largest is on the right side at the vertex in the region of the first frontal convolution, the second is on the right side in the region of the upper part of the parietal lobule and the third is on the left side, just anterior to the fissure of Rolando, involving the ascending frontal convolution.

In connection with all these areas beneath the pia-arachnoid there are collections of yellowish green pus. The longitudinal sinus contains parietal antemortem clots; the lateral sinus is free from clots.

Bacteriologic Examination.—Coverslips from the uterus show cocci in chains, not decolorizing by Gram, and bacilli decolorizing by Gram.

Cultures from spleen, bile, and meninges were sterile. Cultures from uterus and left renal thrombus show *Streptococcus pyogenes* and *Proteus vulgaris*.

Pathologic Diagnosis.—Thrombosis of veins of left broad ligament and left renal veins. Thrombosis of branches of the right pulmonary veins. Thrombosis of the longitudinal sinus. Multiple thromboses of cerebral vessels with areas of softening. Purulent meningitis over these areas. Chronic adhesive pleurisy on left side. Cloudy swelling of heart muscle, liver, and kidney. Acute splenic tumor. Puerperal uterus.

CASE IV.—*Suppurative salpingitis and perisalpingitis; lymphangitis; septic endometritis; general suppurative peritonitis from infection with the streptococcus, the gonococcus and the colon bacillus; septicemia.*

Record of New York Lying-In Hospital, Case No. 8410.

Clinical history.—Primipara, aged 18.

Previous history.—Six days before entering the hospital labor pains set in and the patient was delivered of a seven months' child by an outside physician. The child lived one hour. Bowels moved with an enema on the second day and at this time there was "fever" and abdominal pain. On the sixth day she was sent to the hospital, having suffered with pain in the lower abdomen and "fever" during this time.

Condition at entrance on sixth day postpartum.—Pulse 110, high tension, regular. Temperature 104°, no abdominal tenderness. No rigidity.

Uterus seems well involuted. Vaginal examination shows many condylomas and profuse purulent discharge. The uterus is anteverted, soft, tender and fixed. Os admits one finger, no placental masses are felt. On palpation in the lateral fornixes, extreme tenderness is elicited. Left appendage seems negative; but on the right there is a moderate sized fixed mass. No mass or swelling is found in the cul-de-sac. Rectal examination corroborates vaginal.

Smear taken from inside of the cervix shows gonococci and streptococci. Culture from the uterus showed streptococci in pure culture. Blood culture on the sixth day was negative. Leukocyte count was 29,000, of which 90.5 per cent, were polymorphonuclears. Urine showed a trace of albumin with hyaline casts. Leucin and tyrosin were absent. The diagnosis at this time was septic endometritis with gonorrheal salpingitis.

On the seventh and eighth days her condition was unchanged. Bowels moved freely. Evening temperature was 102° with morning remission. There was slight pain in the hypogastrium. On the eighth day temperature was 103° in the evening and pulse 100. No abdominal rigidity was shown.

On the ninth day, after a large bowel movement patient complained of sudden and severe abdominal pain and difficulty in breathing. Pain was referred to the epigastrium and right lumbar region. It was peristaltic in character, intermittent, and intense. The tongue was dry and there was slight vomiting of clear green fluid. Pulse rose to 120, was thready and of high tension. Abdomen was very markedly rigid and tender. Expression was anxious and patient cried out with pain.

Vaginal examination showed slight fullness in the cul-de-sac with marked tenderness, otherwise as before. Leukocytosis at this time was 11,000, of which 89.2 per cent were polymorphonuclears.

Patient was put on the operating table four and a half hours after onset of acute pain and rigidity. Laparotomy was done under ether anesthesia in Trendelenberg position with median incision.

On opening the peritoneum large quantities of seropurulent fluid escaped. Severe general peritonitis was present with marked congestion of the visceral blood-vessels. Peritonitis was most intense in the pelvic region. Appendix was adherent to right tube and ovary. Right tube was large, much thickened and inflamed and covered with tags of adhesions. Pus exuded from the fimbriated end. There were the remains of many recent adhesions in the region of the right tube and in the right side of the pelvis. Right tube and ovary were removed with the uterus, leaving the left tube and ovary and stump of cervix. The entire peritoneal cavity was flushed with hot saline solution. Iodoform gauze drain was passed through the cervix and abdomen closed by through-and-through silk-wormgut sutures, as patient's condition was poor. Death occurred after four hours without rally.

Blood taken from vein just before operation and placed on serum agar and ascitic agar yielded no growth.

Cultures taken at operation from the peritoneal pus, and from the fimbriated end of the tube showed *B. coli* and streptococci; from the inner end of the tube, no growth; from the uterine cavity, no growth.

CASE V.—*Acute suppurative (postabortive) endometritis salpingitis; acute fibrino-purulent peritonitis; general infection with pneumococcus; pyemia.*

Records of the Bender Laboratory, autopsy 0-756.

Clinical history.—Patient, aged 20. Para II, four months pregnant. Abortion was induced by a midwife by means of a catheter. Infection resulted. She was admitted to the Albany Hospital and the uterus was curetted and packed; but she died three days afterwards. Temperature was 102° at admission and ran from 102° to 103° until death from peritonitis.

Autopsy by Dr. Stanton.

Abdominal cavity.—All peritoneal surfaces are covered with a sticky, grayish yellow, purulent exudate which is thin between adherent surfaces of peritoneum, but reaches 1 mm. to 4 mm. in thickness over the peritoneal surfaces held apart by collections of fluid. Omentum completely covers intestines, its free border reaching down into the pelvis, where it is covered with a thick layer of fibrinopurulent exudate. The pelvis and dependent portions of the abdomen are filled with a yellowish turbid fibrinopurulent exudate. The subperitoneal bloodvessels are everywhere deeply injected. The urinary bladder is distended, reaching 3 cm. above the pubes. Appendix measures 8.5 cm. in length, has a free mesoappendix, extends downward and inward over the brim of the pelvis and is negative, except for exudate on the peritoneal surface.

Uterus and appendages: These are covered with a black layer of fibrinopurulent exudate. The fimbriated extremity of the left tube is turned upward, is deeply congested and exudes a thick creamy pus when the tube is compressed. Right tube extends downward, backward and outward, the fimbriated extremity lying behind and below the ovary, and is embedded in a thick layer of the fibrinopurulent exudate. Both tubes are deeply congested, somewhat swollen and on pressure a thick cream colored pus can be forced from both abdominal and uterine ends. Mucosa of the tubes is deep red in color and is covered with cream colored pus; ovaries are deeply injected and covered with a fibrinopurulent exudate.

Uterus: This is enlarged, globular in shape, extending upward to the level of the promontory of the sacrum, is distinctly retroflexed. Cervix measures 2.5 cm. in diameter and projects 1 cm. into the vagina. Cervical canal is dilated, easily admits one finger and measures 3 cm. in length; external os is deeply congested and covered with a yellow purulent material. Uterine cavity above the internal os measures 7.5 cm. in length; the muscle is firm; the inner surface of the uterus presents a grayish granular surface with areas of bluish black and deep red discoloration. There is no evidence of endometrium.

Vagina: Negative except for congestion and bluish discoloration in the region of the cervix. This is especially marked in the posterior fornix.

Right common iliac vein contains several grayish granular masses 3 mm. to 5 mm. in diameter, the remains of softened thrombus.

Bacteriologic Examination.—Smears from the peritoneum show numer-

ous cocci in pairs and short chains with numerous bacilli of varying morphology.

Cultures from peritoneum, liver, spleen and kidney show numerous minute translucent slightly raised colonies on agar from which are obtained lanceolate diplococci staining by Gram's method. Subcultures from these minute colonies were sterile after 48 hours. On original cultures were also moist, semitranslucent colonies 1 mm. to 3 mm. in diameter, from subcultures of which was obtained a gas-producing bacillus which coagulated milk with acid reaction.

Cultures from the uterus showed a large number of organisms which were not worked out.

Microscopic Description.—Uterus: Mucosa has been removed. Muscular walls show narrow zones of necrosis adjacent to uterine cavity. Small bloodvessels near cavity are thrombosed. Considerable leukocytic infiltration of all tissues with scattered masses of bacteria.

Tube is markedly congested and lumen is filled with pus. Serous surface is covered with an exudate of fibrin and leukocytes. All coats are infiltrated with polynuclear leukocytes and lymphocytes. Fibroblasts with a few new formed bloodvessels are found beneath the exudate on the peritoneal surface. Gram-Weigert stains show numerous cocci in pairs and short chains, and long rod-shaped bacilli.

Pathologic Diagnosis.—Acute suppurative salpingitis and endometritis. Acute fibrinopurulent peritonitis. Mural thrombus of right heart. Congestion and edema of the lung with hemorrhages. Slight cloudy swelling of liver and kidneys.

CASE VI.—*Acute hemorrhagic endometritis; acute suppurative peritonitis and pericarditis; septic pneumonia with pleuritis; Staphylococcus pyogenes aureus infection; pyemia.*

Bender Laboratory Records, autopsy 0-198.

Clinical history: After an apparently normal pregnancy, patient was delivered by a midwife and entered the hospital on the eighth day postpartum very profoundly infected. Death occurred 36 hours after, her condition being so bad that nothing could be attempted in the way of operative measures.

Autopsy by Dr. George Blumer.

Peritoneal cavity contains about 300 cc. of turbid purulent fluid. Both layers are dull, injected and covered with a small amount of fibrin. Intestinal coils and omentum are adherent to one another by fresh adhesions. Appendix is normal. Retrosternal glands are not enlarged.

Pericardial cavity: Distended with 250 cc. of turbid yellow fluid. Both layers are dull and slightly injected.

Left pleural cavity: Contains about 1,000 cc. of turbid serous fluid. Right pleural cavity also contains turbid fluid.

Left lung: Pleura is covered by layers of fibrin and lymph. Both lobes are crepitant and on section are congested and edematous. Bronchi are congested and covered with mucopurulent fluid. Bloodvessels are normal.

Right lung: Bound down by fresh adhesions on all its surfaces. Pleura is also covered by layers of fibrin and lymph. Lung is less

crepitant than normal and lower lobe feels quite solid. On section lower lobe shows bronchopneumonic areas and elsewhere lung is congested and edematous.

Uterus is enlarged, subinvolved, soft and measures 12 x 8 x 5 cm. Peritoneal covering is injected and covered with a plastic fibrinous exudate. The os is patulous and escaping from it is a large amount of sticky blood-stained material. The endometrium is markedly congested and shows a few discrete submucous hemorrhages, the mucosa is covered with tenacious foul mucoid fluid. Uterine walls are 2 cm. in thickness. Mucous membrane of the vagina is congested and shows a few hemorrhagic points. Tubes and ovaries are apparently normal.

Bacteriologic Examination.—Smears from fluid of pleura, pericardium and peritoneum contain many polymorphonuclear leukocytes with round cocci, generally single, which do not decolorize by Gram's method.

Cultures from spleen and gallbladder are negative. *Staphylococcus pyogenes aureus* is obtained in pure culture from liver, pleura and uterine cavity. Cultures from the bronchopneumonic areas of lung and from peritoneum show colon bacillus as well as *Staphylococcus pyogenes aureus*. Kidneys give a pure culture of colon bacillus.

Pathologic Diagnosis.—General infection with *Staphylococcus pyogenes aureus*. Infection of kidney, lung and peritoneum with *B. coli communis*. Bronchopneumonia with edema of the lungs. Acute bronchitis. Fibrinopurulent peritonitis, pericarditis and pleurisy. Acute splenic tumor. Cloudy swelling of kidney. Subinvolved uterus with acute hemorrhagic endometritis.

DISCUSSION OF CASES.

CASE I.—Legg's statistics show that 69 of 100 cases of acute yellow atrophy occurred in females and in 25 there was the association of pregnancy. Thierfelder collected 143 cases, of which 88 occurred in females and in 33 instances it was associated with pregnancy. However, acute yellow atrophy is also found in association with many other conditions and with bacterial infections. Among the bacterial diseases may be mentioned typhoid fever, diphtheria, erysipelas, osteomyelitis and puerperal infection. Richter² has collected 41 cases of acute yellow atrophy in association with syphilis. Babes³ has reported 5 cases following streptococcus infection and Ballin⁴ has collected 10 cases following chloroform anesthesia.

Hyperemesis gravidarum is a not infrequent association with acute yellow atrophy. Stone⁵ reports one case of acute yellow atrophy with this association and collects a large number of others. Meyer-Wirz⁶ among other degenerative changes in the liver of patients dying from eclampsia found one case of acute yellow atrophy, not associated with puerperal infection.

The frequent occurrence of infection in association with

eclamptic and other toxemias of pregnancy is well known. Schrieber⁷ in a statistical study, reports that out of 29 deaths with eclampsia 7 died of sepsis, and Meyer-Wirz,⁸ in 117 cases of eclampsia, had 35 deaths, in which puerperal infection had supervened in three and in an additional case there was septic pneumonia. However, the toxic symptoms, as shown by the vomiting, were not severe in the case reported here; but it seems that the association of infection and pregnancy is a factor of some significance in the production of acute yellow atrophy of the liver. Strictly speaking, this should, perhaps, be considered a complication of pregnancy rather than an example of puerperal infection. In view, however, of the probability of the infection beginning in the genitalia it may justly be considered here.

CASE II.—Pyonephrosis is a rather uncommon complication of pregnancy, but hydronephrosis and dilation of the ureters does not appear to be so. Olshausen⁹ has reported 16 cases of dilation of the ureter, in 12 of which the condition was unilateral and in 10 of these on the right side. This distribution is supposed to be due to the greater frequency with which the fetal head lies in the right oblique diameter of the pelvis. In this case the position was l. o. a., but the measurements of the pelvis were not noted. It may be possible that a generally contracted pelvis with an obliterated promontory would permit pressure to come upon both ureters at the pelvic brim and cause such dilation of the ureters as occurred in this case.

Cragin¹⁰ in a study of 10 cases of pyelitis complicating pregnancy, states that according to Vinay¹¹ this condition depends upon two etiologic factors: (1) Pressure of the ureter by the pregnant uterus; (2) infection of the urinary tract above the point of compression. Cragin states that in his cases the clinical course was marked by right-sided pain, sometimes elicited only by palpation or sudden motion. A rise of temperature usually occurred. He states that irritability of the bladder with frequent micturition is common, but that "the infection is a descending one and cystitis, when it does occur, is usually secondary to the pyelitis and ureteritis."

The experiments of Rebdaud and Bonneau upon animals are quoted in support of this view. These investigators produced pyonephrosis by aseptic ligation of the ureter and the injection into a distant part of the body of streptococci or colon bacilli.

The case reported, because of the exemption of the bladder

and the lower part of the ureter, seems to have been a descending infection. Staphylococcus infection in such cases is rare; colon infection is by far the most frequent cause according to the collected cases of Cragin. One instance of streptococcus infection has been reported by Vinay and one of gonococcus by Loy.

It is interesting to note in view of the recently advanced theory of the common origin of eclamptic toxemia and toxemia of pregnancy with vomiting that this case was admitted to the hospital for pernicious vomiting and that Meyer-Wirz in his 35 autopsies for eclampsia noted bilateral hydronephrosis and dilation of the ureters in one case.

Rochard¹² reports a case of severe bilateral pyelonephritis in advanced pregnancy with immediate recovery after delivery of twins. He quotes Kendirdjy's statistics of 62 cases among which there were only two deaths, and advises expectant medical treatment, but states that if interference is necessary premature delivery should be the rule rather than an operation on the kidney. Cova¹³ has reported 21 cases in which nephrectomy was done with resulting abortion in only five. The danger of involvement of the second kidney is so great that it would seem preferable to remove the cause of compression of the ureter rather than to remove the kidney.

Fournier¹⁴ has reported two cases of this condition with varied course. In one there was gradual onset in the early months of pregnancy, premature labor and birth of a dead child at seven months. In the other there was an acute attack, nephrotomy and labor at term. Schwab¹⁵ also reports two cases, in one there was a history of gonorrhea and the infection was severe, but patient went to term. The second case was one of hydramnios and ran an apyretic course. The colon bacillus was the infecting organism and a live child was born at 8 months of pregnancy. Schwab draws attention to the difficulty of diagnosis and of the difficulty of differentiating from appendicitis.

Cathala¹⁶ in a clinical and pathologic study of pyelonephritis in pregnancy states that there are two main causes: (1) Predisposing cause, the lessened resistance of the pregnant woman to bacterial infection and the retention of urine from compression with its associated congestion. (2) Determining cause, the penetration of the infecting organism to the kidney. He divides the clinical course into two periods: that of onset, in which there are symptoms of general infection; and that of attack, in which

there are symptoms of chronic suppurative pyelonephritis. He concludes that the prognosis for the child is bad, for if pregnancy does go to term, the infant not infrequently is of small size and weak.

CASE III.—Periuterine thrombophlebitis is a most serious condition and is the most frequent predisposing cause of pulmonary embolism and sudden death in pregnancy. Grossman in a study of 51 autopsies upon puerperal women dying from infection found periuterine thrombophlebitis alone in 14 instances and associated with lymphangitis in 13 other instances. Other veins in addition to the hypogastric and ovarian were involved in all cases save one; in three instances the vena cava was also included.

Richter¹⁷ lays stress upon Mahler's sign ("Kletter symptom"). the rapid beat of the heart due to extra work and slight degeneration. He has collected results from 16,000 cases and found 78 cases of thrombosis and 20 cases of embolism; of the last 60 per cent were fatal. Mahler's sign was found in 98 per cent of these cases.

The thrombosis may be due to mechanical causes, but is more frequently associated with infection. The initial lesion in the case reported here would appear to be the infectious process in the throat. This case is possibly, therefore, one of autoinfection, as is the case of pyonephrosis.

CASE IV.—Gonorrheal infection in the puerperium has been much discussed among obstetricians and widely divergent opinions are held in regard to its incidence and its influence upon tissues altered by pregnancy.

Kronig's¹⁸ study of 179 cases of puerperal fever showed that *M. gonorrhoeae* was found in 50 cases, while Williams¹⁹ found the organism in 8 of 150 cases of puerperal fever. Vogel²⁰ in 24 cases of puerperal fever found gonococci 4 times, twice in pure culture and twice in association with streptococci. Foulerton and Bonney²¹ examined 54 cases with negative results. Stone²² and myself, in a study of 53 selected cases of pregnancy, found the gonococcus in 17. In three cases labor was premature.

Martin²³ kept under observation 13 cases of chronic gonorrhea during labor and the puerperium and in none of these were symptoms observed which could be attributed directly to the venereal disease. There were no abortions, although in one case labor was hastened by an acute exacerbation of the disease. In four cases the puerperium was practically normal and in the re-

mainder there was a rise of temperature coming on rather late. This the author considers characteristic of the disease.

Lea,²⁴ taking acute purulent conjunctivitis in the infant as a proof of gonorrheal infection of the mother, has collected 50 cases. In 60 per cent there was an uneventful puerperium, while 40 per cent. had more or less acute inflammation of the pelvic organs. Acute purulent endometritis with pyrexia as the most common condition, while in 10 per cent acute pelvic peritonitis existed. All the patients recovered save 3, who were also infected with the streptococcus. In institutions, however, acute purulent conjunctivitis in the child is not a just criterion of the frequency of gonorrheal infection of the mother, for Holt²⁵ has noted the frequent transmission of gonococcus infection among infants that are segregated in hospitals.

The presence of a mixed infection of the gonococcus and some other organism is said to add greatly to the severity of the infection and many cases have been reported to sustain this view. However, the severity of the constitutional symptoms seems to depend more upon the extent of the anatomic lesion than upon the character of the infection.

CASE V.—Pneumococcic puerperal infection is an extremely rare condition and is usually an infection from without. Weichselbaum,²⁶ as well as Bar and Tissier,²⁷ have met this condition, and Cohn has described a case very similar to the one here reported. His patient after abortion developed a pneumococcic endometritis and later a fatal meningitis. Foulerton and Bonney²¹ also report a similar postabortive infection from pneumococcus with five other cases of pneumococcus infection following full term pregnancies. They conclude that the grade of infection is, as a rule, not severe and that their series of cases cannot be taken as a just indication of the frequency of this form of infection.

CASE VI.—General septicemia is not an infrequent termination of puerperal infection. The clinical course is usually that of a rapidly progressive acute infection and follows the same course as other septicemias not of puerperal origin. Streptococcus infection is the most frequent and severe type of infection after labor. If the number of cases studied by Czerniewski, Kronig, Williams, Vogel and Foulerton and Bonney be collected, it is found that of 498 cases in which the contents of the uterus was examined bacteriologically, streptococci were present in 200 (40 per cent). While streptococcus is so frequent, *Staphylococcus pyogenes*

aureus is most infrequent. Foulerton and Bonney found this organism but once in 54 cases and it is but infrequently mentioned by other writers. *Staphylococcus pyogenes aureus* was found in two of the six cases in this study; in one the infection was of the kidney and in the other an acute general infection of all the organs.

CONCLUSIONS.

A consideration of these six cases teaches many things in regard to the diagnosis and management of puerperal infection in the more advanced stages of the disease. It may be seen that while streptococcus infection is usually the most common and severe type of infection, other organisms which usually produce clinically mild symptoms, may run a severe course and cause death.

Autoinfection must be considered to include infection from foci of bacterial disease in distinct parts of the body. Pregnant women suffering from such distant infection require most watchful care. Autoinfection from the genital canal is probably more common than is generally supposed. This is indicated in a study by Bumm and Sigwart²⁸ of the bacteriology of the secretions of women in the later months of pregnancy. The streptococcus was found to be present in more than 38 per cent. of the cases and they conclude that with very careful examination aerobic streptococci may be found in the secretions of at least 75 per cent of all women during pregnancy and the puerperium. Of the women having streptococci, 20.4 per cent had fever.

From this fact it may be seen that the presence of pathogenic microorganisms in the genital canal is by no means sufficient evidence upon which to base a diagnosis of puerperal infection, and even when combined with constitutional disturbances the first step only has been taken toward the proper diagnosis of the condition. The term puerperal infection should be broadened to include infection elsewhere than in the uterus, and the location and nature of such lesions should be recognized before any operative measures are undertaken. This can only be done by exact physical examination, examination of urine, blood, etc., and a proper knowledge of the varied anatomic manifestations of infection. The frequency with which pain is right-sided in hydronephrosis and pyelitis should be remembered in differentiating the diagnosis from appendicitis.

The utter futility, and even harmfulness, of curettement, if at-

tempted in such cases as those here reported, is readily seen; and when the varied character and oftentimes widespread distribution of puerperal infection are considered, the explanation for the high mortality (over 70 per cent) of hysterectomy in that condition is obvious.

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A NOTE ON EMBRYONIC GLANDULAR TUMORS OF THE KIDNEY WITH THE REPORT OF A CASE.

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In 1899 Birsch-Hirschfeld, in a study of the tumors of the kidney, classified as embryonic glandular tumors those new growths which formerly had been termed adenomyoma, adenosarcoma and adenomyosarcoma, names which were descriptive of the tissues of the tumor but which did not indicate their origin. He proved that these tumors had a common origin in embryonic life.

Such tumors are not of infrequent occurrence, forming as they

do twenty-eight per cent. in Walker's collection. They occur nearly always in children; only two cases have been reported in adults, that of Hoisholt in a male of eighteen years and that of Muus in a female of thirty-four years. Their growth is rapid and they metastasize early and after removal generally recur *in situ*. In spite of their malignant nature this form of tumor has attracted very little attention in this country, for from 1899 until the present time I have found only one reported case, that of Blumer in 1903.

All these tumors have in common a glandular tissue and an embryonic or archiblastic tissue which resembles closely that of sarcoma. In addition to these tissues smooth and striated muscle, cartilage, fat and connective tissue are commonly present. They grow almost without exception in the pelvis or medulla of the kidney and extend outward toward the cortex, gradually compressing the kidney tissue until it forms a capsule for the tumor. Metastases develop generally by way of the blood vessels and but rarely by way of the lymphatics. The various tissues of the primary growth are reproduced. The minute structure of these tumors varies within wide limits, owing to the variable proportion of the tissues present.

The case here reported occurred in the practice of Dr. Charles S. Jennings of Detroit, Mich.; no clinical notes or autopsy report could be obtained.

The exact dimensions of the kidney cannot be determined because the specimen has been sectioned and portions removed. The tumor is nearly globular, located within the substance of the kidney and measures 3.5 cm. in diameter. The surface is fairly smooth with here and there furrows marking definite lobulations; the consistence is firm. It is partially surrounded by kidney substance which forms a capsule 0.6 cm. in thickness and where the kidney tissue ends the fibrous capsule continues over the tumor.

On section the tumor is solid and of fibrous structure. Definite masses of fibres arranged in large bundles pass in various directions and give to the tumor an appearance identical with that of a myoma of the uterus.

Attached to the kidney at the hilum is a considerable amount of fibrous tissue in thin layers suggesting that it may have formed the wall of a large cyst the contents of which have been lost. In this tissue are some smaller cysts containing a colloid-like material and numerous large blood sinues. The exact relationship

of the cysts to the kidney cannot be made out because the specimen has been so badly torn.

The microscopic appearance of the parenchyma of the kidney is normal; there is, however, on the outer surface of the capsule an exudate of fibrin and polymorphonuclear leucocytes indicating a perinephritic infection.

The tumor has no distinct capsule separating it from the kidney substance and in places it invades the kidney. The growth at no point extends beyond the capsule of the kidney. Its finer structure presents a much more complicated picture than the gross appearance indicates. Several varieties of tissue are to be considered, as follows:

A.—Glandular tissue in the form of tubules running in all directions, appearing in longitudinal and cross section. These tubules are apparently of two kinds—those belonging to the kidney which have been enclosed in the peripheral parts of the tumor, and those which form an integral part of the growth. This second form of tubule originates in the youngest portions of the growth from accumulations of small round deeply staining cells situated in and derived from the archiblastic tissue. The glandular elements are small in amount and form only a small part of the tumor.

B.—Embryonic or archiblastic tissue forms a considerable portion of the tumor and represents that portion which is growing most rapidly. In appearance it closely resembles sarcomatous tissue; the cells are large, round or oval, with pale staining nuclei and are packed closely together with no stroma. It is in this tissue that the groups of small round cells are found from which the tubules are developed. Blood spaces are very numerous in some parts of this tissue so that it resembles angio-sarcoma closely. At the hilum this tissue forms long cylindrical projections which rapidly undergo degenerative changes. In the more advanced of these the archiblastic tissue is replaced by what appears to be fibrous connective tissue often mucoid in character. The connective tissue at the periphery rapidly undergoes hyaline degeneration so that finally the cylinder consists of a central axis of mucoid connective tissue surrounded by a mass of homogeneous hyaline-like material. Blood vessels are very numerous in these projections, while glandular elements are relatively scarce. Several dilated, almost cystic, spaces were found in the cylinders lined by flattened epithelium which suggests that probably the

cysts mentioned in the gross description were formed in this way from the tubules.

In the absence of any autopsy record the presence of metastases was not determined.

In reconstructing the tumor from the individual tissues that have been described we find that the smooth muscle represents the oldest portion and is located in the substance of the kidney growing into it and enclosing tubules and glomeruli. For this reason tubules and glomeruli are found in the myomatous portion of the tumor.

The archiblastic and glandular tissue represent the youngest and most rapidly growing portion of the tumor and is always found at a distance from the kidney. It extends into the fibrous tissue at the hilum in the form of cylinders as described above. The cartilage fat and connective tissues are very scanty in amount and are found near the archiblastic tissue.

From this description it is clear that this tumor began its growth within the kidney, probably near the hilum, that it is of congenital origin and that it must be classed as a mixed tumor, belonging to the group classified by Birsch-Hirschfeld as embryonic glandular tumors.

The method of development of these tumors has been the subject of much controversy and several theories have been advanced which for the convenience of description may be divided into two groups.

A.—The development of the tumor from cells within the kidney. The older view that these tumors should be classed as primary carcinomata or sarcomata of the kidney is no longer considered correct. A carcinoma develops from fully developed epithelial cells in an adult organ, whereas these tumors are found almost exclusively in very young children and metastasize by way of the blood vessels. To be classed as sarcoma it must be assumed that the glandular tissue has sprung from kidney tubules, which is not the case, as has been seen in the tumor just described. The tubules are an integral part of the tumor and take an active part in its growth.

The more recent view that these mixed tumors have their origin in tissues present in the kidney of the embryo is supported by Busse and Muus. The former found, in a foetal kidney, tissues which closely resemble those occurring in these tumors and

he is convinced that the tumors take their origin from such tissues.

Muus believes that a portion of the embryonic kidney takes on a pathological growth and so forms a tumor. The various tissues of the tumor are supposed to originate by metaplasia from the tissues of the embryonic kidney, thus sarcoma-like tissue from round cells, epithelium from the interstitial tissue, mucoid tissue, cartilage and fat from connective tissue, smooth muscle from that normally present in the kidney, striated muscle from smooth muscle.

B.—The theory that the tumors originate from embryonic cells outside the kidney but enclosed during development. This view is strongly supported and was originally advanced by Birsch-Hirschfeld, who believes that a portion of the Wolffian body in the embryo in some way becomes enclosed in the developing kidney and forms the starting point of the tumor. Vogler, Merkel, Heincke, Sander and Blaess also accept this view. Wilms calls attention to the fact that the Wolffian body contains no striated muscle and that none is present in any of the organs developing from it. The metastases furthermore contain all the varieties of tissue found in the main tumor, so that a metastasis of cells representing all these tissues is unlikely. He concludes from this that the origin of the tumors must be placed at a much earlier period of embryonic development when the cells are undifferentiated, that is, germinal tissue cells which in their later development are capable of forming all these various tissues.

These cells might be misplaced at the time when the primitive segment and lateral plates are formed from the middle germinal layer. The striated muscle develops from the myotom of the primitive segment from which all the striated muscles of this region develop. The smooth muscle, fat, connective tissue and cartilage originate from the sclerotom of the lateral plates while the epithelium originates from the nephrotom (Wolffian body).

If a small portion of these structures become misplaced and take on a pathological growth it would readily explain the various tissues found in these tumors.

The presence of cysts in association with these tumors has not been mentioned so far as can be found in the literature. The formation of the cysts in the tumor here described seems to have taken place either by hæmorrhage and degeneration in the archiblastic tissue or in a gradual dilatation of the tubules. This view

lends support to the theory already generally accepted that cysts of embryonic origin result from misplaced mesodermal tissue.

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TUBERCULOSIS OF AN ADENOMYOMA OF THE UTERUS.*

By J. L. ARCHAMBAULT, M. D.

WITH A PATHOLOGIC REPORT

By RICHARD M. PEARCE, M. D.

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That tumors in general are not subject to invasion by bacteria, other than those of the pyogenic group, is well known. The simultaneous occurrence of carcinoma and tuberculosis in an organ or tissue is occasionally reported, but the invasion of other tumors by the tubercle bacillus is very unusual. This is especially true of uterine myomata which are seldom involved in even the most extensive tuberculous infections of the adjacent mucosa. The case here reported is of interest not merely on ac-

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count of the rarity of the condition, but also because of the absence of tuberculosis in the mucosa of the general uterine cavity with but a slight lesion in one tube. The tuberculosis of the myoma and that of the tube were secondary to tuberculosis of the lung, but apparently independent of one another and due to infection through the blood stream. As a fairly exhaustive review of the literature fails to reveal an analogous condition our observation appears to be worthy of record. A detailed report follows:

Clinical History.—H. E., aged 20, an only child, unmarried, was admitted to the Cohoes Hospital, January 10, 1906. Her family history offers several points worthy of note. Her mother presents evidence of tabes and her father died at forty-six of a valvular lesion of the heart which formed part of the plainly luetic condition. Her grandfather, on the mother's side, had syphilis, and the grandmother succumbed to general paralysis. There is no direct tuberculous heredity.

Personal History.—The patient had measles in early childhood and showed some indications of hereditary syphilis, viz.: A slowly-healing ulcer of right leg and a nose of the saddle type.

Menstruation beginning at sixteen, has always been very scanty, irregular and tardy, with occasional amenorrhea for periods of five to six months. An epistaxis, apparently vicarious, had been frequent. Menstruation, at first painless, later became more difficult. At no time had there been leucorrhea. Dec. 14, 1904, a pelvic examination showed the uterus to be very small, of the infantile type, and lying in a moderate degree of retrodeviation, with some tenderness in the region of the left ovary.

July 30, 1904, the patient had a sudden attack of hemoptysis. A careful physical examination gave evidence of a localized adhesive pleuritis of the left apex, overlying an area of tuberculosis, involving a considerable part of the apex and extending down and outward toward the axillary line. After a sojourn at the seashore and in the mountains she was considerably improved in general health, while the physical signs had manifestly retroceded and in part entirely disappeared. The following winter (1904) was passed in the mountains and she returned in April still more improved. July 15, 1905, she had a second very slight hemoptysis, but improved rapidly, gaining by November 13, twenty-nine pounds.

Present Illness.—Abruptly, about November 21, she began to complain of soreness and pain in the hypogastric region. The pain was dull in character, intermittent, returning especially in the latter part of the day, and exaggerated by fatigue and standing. The patient had not menstruated in five months. As the pain continued unabated for a week, without any appearance of the menstrual flow, she was advised to return home. On bimanual examination, the cervix was found deviated toward the pubes and the Douglas cul-de-sac occupied by the enlarged fundus of the retroverted uterus. The fundus gave the sensation of a firm mass of about the size of a mandarin and somewhat irregular in

shape, being larger on the left, and very slightly movable. The left lateral cul-de-sac was also occupied by another swelling less firm and less voluminous, having neither the fibromatous woody feeling of the main tumor nor the fluctuation of a cyst; this second enlargement seemed almost contiguous with the uterine body. The condition of the right adnexa could not be defined. These conditions were not present at the previous examination, eleven months before.

At this stage, the pulmonary condition presented a marked change. While no advancement of the disease was evident in the left apex and the corresponding axillary region, two new foci had appeared; one in the left base posteriorly and the other in the right interscapular space, close to the spinal column.

December 15, menstruation occurred and lasted five days. After a few days interruption, there was again some slight bloody discharge. This discharge kept on thereafter, more or less irregularly, until the time of operation. The pains became gradually more intense, finally requiring the daily use of some sedative for their control.

January 5, the size of the pelvic mass was considered to have increased materially. On that same date, a few tubercle bacilli with a great number of diplococci and streptococci were found in the sputum. Three previous examinations of the sputum had been negative.

Much concern was naturally entertained as to the exact nature of the uterine condition. The first diagnosis was simply one of a solid tumor, probably a fibromyoma, occupying the posterior wall of the uterus. A closer study, however, of all the evidence suggested the possibility of a tuberculous lesion of the uterus, and this possibility was carefully explained to the family.

Of course, on account of their rare occurrence, the diagnosis of any of the pelvic forms of tuberculosis is seldom made until the abdomen is opened, and even then not infrequently only after the specimen is in the hands of the pathologist. Uterine tuberculosis has no well-defined symptomatology. In the present instance, if a probable diagnosis of a tuberculous condition of the uterine growth was arrived at before operation, it is willingly conceded that we expected to find as well a similar condition of the adnexa and of the peritoneum; that is, a general abdominal tuberculosis. In holding this view, we were influenced by the existing pulmonary condition and by abdominal symptoms which predominated especially during the very last weeks. When the abdomen was opened, it was a surprise, therefore, to find that, aside from numerous and extensive adhesions of an inflammatory nature, the general as well as the pelvic peritoneum was free from tuberculosis.

Surgical Report.—January 11, laparotomy; medium incision nine centimeters long. A coil of small intestine was found drawn down into the pelvis and firmly adherent close to the right uterine cornu, evidently accounting for the pain in the abdomen which had been so striking a feature. Both ovaries were fibrocystic. The uterine body, enlarged to the size of an orange, lay deeply in Douglas' cul-de-sac and was so matted up in adhesions that a subtotal hysterectomy was performed. The appendix was inspected and, being healthy, was left undisturbed.

Convalescence was uneventful, and the patient reported April 16, that she had gained ten pounds in weight and was in the best of health.

PATHOLOGIC REPORT BY DR. RICHARD M. PEARCE.

Gross Description.—The specimen consists of a uterus with its appendages. The former is exceedingly firm and almost globular in shape, measuring 17.5 cm. in circumference just below the level of the attachment of the Fallopian tubes and 19.5 cm. over fundus and cervix. The cervix protrudes beyond the globular body as a short, thin, circular process, 0.8 cm. long and with walls 0.4 cm. thick. Its edges are smooth, rounded and grayish-white in color. The peritoneal surfaces are covered more or less uniformly by coarse fibrous adhesions. On section the entire length of the uterus from cervix to fundus is 6.8 cm., the greatest thickness, antero-posteriorly, 5 cm. The body itself is 6 cm. in length. The anterior wall is normal in appearance, though slightly thickened, and measures 1.4 cm. at the mid portion of the uterine cavity. The fundus is 1.7 cm. in thickness. The posterior wall is occupied by a globular mass extending from the median line of the fundus to the internal orifice of the cervix (5.2 cm.) and laterally from the peritoneum to the uterine cavity (4 cm.). This mass is composed of firm, dense, grayish-white tissue having a whorl-like appearance and resembling the structure of myoma in a general way, but riddled everywhere by cavities varying from those miliary in size to those 0.5 cm. in diameter. From these cavities escapes a thick, yellow, more or less tenacious pus. The walls of the larger cavities, after the escape of the fluid pus, are seen to be lined by a yellow, soft granular material, suggestive of caseation. These areas extend to within two millimeters of the peritoneal surface and toward the median line approach and apparently involve the mucosa. The cervix is not involved. The uterine canal is 4.7 cm. long, 1.2 cm. of which is cervical. It is greatly narrowed and 2 cm. below the fundus is almost entirely obliterated. In or beneath the mucosa covering the lower portion of the tumor are numerous closely-set, fine, yellowish miliary areas. These do not involve the mucosa of the anterior wall nor that of the cervix.

The tubes and areas are atrophied. The left tube and ovary are bound to the uterus by fibrous adhesions; the right is free and has a smooth peritoneal covering. Each ovary contains a few small cysts.

Bacteriology.—Cover glass preparations of material from the cavities in the tumor, stained by methylene blue, show pus cells which take the stain well, many poorly-staining necrotic cells, and much granular

detritus but no micro-organisms. Attempts to demonstrate the tubercle bacillus and the gonococcus are negative.

Agar, blood serum and hydrocele-agar tubes are sterile after 72 hours.

HISTOLOGIC DESCRIPTION.

Sections Passing Through Uterine Wall and Tumor.—The greater portion of such show a diffuse tuberculous process in a tissue composed of smooth muscle fibers and containing widely scattered tubular glands. The uterine wall proper, measured beneath the cover glass, is 3 mm. in thickness. No tubercles are present in the slightly thickened peritoneal covering, but between it and the musculature small tubercles are occasionally seen. In the muscle itself, which contains an increase of connective tissue, are a few well-developed tubercles with caseous centers. About the blood vessels are numerous lymphoid cells. The line between the normal uterine musculature and the tumor in the upper portion of the uterus is intact, but in the submucosa are irregular accumulations of lymphoid cells. At a point where the definite arrangement of the musculature ceases there is an abrupt transition to diffuse tuberculous tissue containing numerous giant cells and characterized by extensive caseation; few typical tubercles can be seen. In the midst of this are found here and there isolated areas of smooth muscle, containing tubular glands. These latter are lined for the most part by several layers of cylindrical cells, of the type found in the uterine glands, but are tortuous and show more or less irregular dilations. They are not infrequently arranged in clusters and have branching prolongations with but a single layer of epithelium. In the masses of muscle a moderate amount of connective tissue is present and also a slight infiltration of lymphoid cells. The glands are found throughout the new tissue, even at a distance of 2 cm. from the uterine wall and have no relation to those of the mucosa. There is no evidence that the channel of the tuberculosis infection was along these glands.

Sections taken at three levels and passing through entire wall of apparently normal portions of uterus opposite tumor show no evidence of tuberculosis. The mucosa in each is normal. A section through the cervix shows no lesions.

A section across the entire uterine canal at a point of greatest constriction shows partial obliteration, but no tuberculosis of the mucosa. The lumen at this point contains a small plug composed of mucus, leucocytes and desquamated epithelial cells.

Right Fallopian Tube.—The mucosa is entirely destroyed. The surface is a chronic granulation tissue with, in its deeper layers, more or less newly formed fibrous tissue. Epithelioid cells are not abundant and are very diffusely arranged. But one definite tubercle with typical giant cell is seen. An occasional oval fibrous and hyaline area is suggestive of healed tubercle, as are also a few small foci of lime salts. In the deeper layers of the muscle coat are accumulations of lymphoid cells and old blood pigment, but no tubercles.

The left Fallopian tube is atrophied, but otherwise not noteworthy. The

ovaries are fibrous and contain a few small cysts, but show no evidence of tuberculosis.

Careful examination of the peritoneal surfaces of the uterus, tubes and ovaries fails to reveal lesions of tuberculosis.

PATHOLOGIC DIAGNOSIS.

Tuberculosis of an adenomyoma of the uterus. Tuberculosis of right Fallopian tube. Atrophy of ovaries and Fallopian tubes. Chronic perimetritis and perisalpingitis.

REMARKS.

As already stated, we have made a search, although not exhaustive, of the medical literature for analogous cases, but have failed to find such.

Closely resembling the case here reported, however, is one observed at the gynecologic clinic of Zurich by C. Bole (du Locle).¹ A summary of this case reads as follows:

History.—Woman, aged 50; heredo-tuberculosis; menstruation at thirteen; leucorrhea. Patient married twice, no children. Dysmenorrhea and loss of strength.

Present State.—Uterus anteflexed, movable, slightly tender on pressure and about the size of a child's head in volume.

Diagnosis.—*Uterine myoma.*

Laparotomy.—Total hysterectomy after Freund's method. The tumor, when extirpated, is twice as large as one's fist. The macroscopic and microscopic examination showed that it was a rare case of myoma associated with an ascending uterotubal tuberculosis. The vaginal mucosa was not involved, and the etiology could not be determined.

This case, however, is not identical with the one here reported. The tumor is intramural, but the tuberculosis is spoken of as an ascending uterotubal infection, and the myoma as associated with it. From this it may be inferred that the mucosa alone was involved in the tuberculous process. This inference also finds support in the statement that the histologic researches bore only on "the superficial portions, in a state of necrosis." Thus it would appear from these comparisons that our case might indeed, deserve to be considered as unique.

Kelly² states that "tuberculosis of the endometrium is exceedingly rare as complication in the large myomatous uterus." He has met but one case, and in this the disease had extended into both tubes.

A last point not to be overlooked is the mode of infection or of transmission to the uterine parenchyma.

¹Genækologia Helvetica, 1903, p. 99.

²"Operative Gynecology," vol. ii, p. 381.

As regards the pathogenesis of the local lesions in our case, it seems very plausible that the adenomyoma constituted the primary lesion and that the tuberculous infection occurred secondarily. But how did this infection take place? How in this particular case was it transmitted from the lungs?

From the clinical history and from the findings at the time of the operation it seems fair to believe that the propagation of the lesions to the uterine tissue took place through the blood current, and in a similar manner, to the only tube involved.

Infection by means of the blood stream seems to be well supported by the conclusions of M. Schakoff,³ which may be given as follows:

Genital tuberculosis in women is generally secondary to a florid or latent tuberculosis of the lungs or of the peribronchial lymph nodes, less frequently to an intestinal tuberculosis. The genital tuberculosis is generally propagated by the blood stream, except in the case of vaginal tuberculosis, which may proceed from inoculation by contact.

Tuberculous peritonitis occurs frequently during the evolution of a genital tuberculosis, especially after a tuberculous salpingitis. Any portion of the genital tract may be affected; the tube is involved more frequently, the vagina less often. These inoculations take place by the blood stream; therefrom the uterus or the ovary may become infected by contiguity. Generally the uterus is infected by descending contagion; it may, however, be involved in the first place. A pre-existing disease and the puerperal state may act as predisposing causes. The uterine cervix is rarely the seat of tuberculosis. The tuberculosis of the ovary is almost always consecutive to a tuberculosis of the Fallopian tube, of the peritoneum, or of the rectum; the propagation occurs by contiguity or by way of adhesions. Independent foci may, however, be found in the ovary without any lesions of the surrounding structures; in such cases these foci have been set up by the blood stream.

In the above conclusions, the two points of practical bearing on our case are: 1. Genital tuberculosis in women is generally secondary to pulmonary tuberculosis. 2. In tuberculosis of the uterus or of the ovary, when the tuberculous lesions are found as independent foci without lesions of the surrounding structures,

³"Contributions to the Knowledge of Tuberculosis of the Female Genital Organs," *Gynäk. Helvet.*, 1904, p. 139.

the inoculation has taken place by the blood current. That the latter would appear to be the case is indicated by the absence of tuberculosis in the mucosa, not only of the uterine cavity generally, but also in that covering the tumor itself. It is possible that alterations in the blood supply of the tumor caused a condition of degeneration or necrosis constituting a *locus minoris resistentiæ* and a point of selection for tubercle bacilli reaching these areas through the blood stream.

A REPORT OF FOUR INSTANCES IN WHICH GIANT CELLS OCCURRED IN UNUSUAL SITUATIONS,

WITH A BRIEF REVIEW OF THE LITERATURE OF GIANT-CELL FORMATION.

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The object of this communication is to report four instances in which giant cells occurred in unusual situations and to bring together in this connection some of the more important literature relating to giant-cell formation.

Accordingly to the circumstances under which giant cells are found, we are accustomed to recognize three main groups: the myeloid type occurring in normal bone marrow and in sarcoma, the Langhans giant cell, characteristic of tuberculosis, and the foreign body giant cell. Upon morphological grounds, however, the latter two groups might be brought on account of the mural arrangement, in most cases, of their nuclei, into a single group, as distinct from the myeloid type, in which the nuclei are distributed irregularly throughout the cell. While finally, if function is considered, it is evident that all may be brought in a single group: that of cells having a destructive action more or less analogous to that of phagocytic cells. This function of the myeloid giant cells of the bone marrow, also known as "myeloplaxes" (Ziegler) and osteoclasts is well recognized, as it is also of the general group of multinucleated cells found about a great variety of foreign particles and the remains of tissue destruction. Concerning the Langhans type, although the evidence is not so clear, there is much to indicate that they may have a similar function.

Despite the fact that much has been written concerning the origin and nature of giant cells, there is little uniformity of opinion. The type of giant cells which has aroused the greatest interest and discussion, in this regard, are those occurring in the lesions due to the tubercle bacillus.

In regard to the formation of these cells, we have two principal views: that of the French school, led by Metchnikoff, and that of the German school, consisting of Weigert and his adherents, among whom are, Baumgarten, Marchand and Klebs. Both schools hold that the giant cells develop from large formative cells, but there is a difference of opinion as to the nature of the cells. Metchnikoff claims that they are of leucocytic parentage, while Weigert thinks they spring from connective tissue or endothelial cells. Again their method of development gives rise to differing views. Some authorities hold that the individual cells, from which the giant cells develop, group themselves around masses of bacilli and become fused, without division of their nuclei. Opposed to this is the view of Weigert, who thinks that they are formed by amitotic or direct division of a single nucleus and cell. Metchnikoff states that giant cells thus formed have ameboid movements and are phagocytic, in that they digest and otherwise remove the tubercle bacilli. On the other hand we have positive assertions that the multinucleated masses possess neither ameboid nor phagocytic qualities. The difficulty does not end here, for different views are also held in regard to the nature of the cellular cytoplasm. Weigert and his associates insist that the central cytoplasm is in the process of necrosis, the nuclei being placed in the more vital parts of the cell. Metchnikoff thinks that the centre of the cell, although appearing necrotic, is especially active, the nuclei being grouped in the less active parts. In other words it is Metchnikoff's opinion that the giant cells of tuberculosis are living and defensive cellular masses, while Weigert is convinced that they are the seat of a progressive necrosis and are without function.

Koch is one of the few Germans whose views do not differ in every respect from those of Metchnikoff. He regards the giant cells as being permanent structures possessed of more vitality than the bacilli which they contain; he says he has seen many cells containing degenerated forms of bacilli, which he contends have been destroyed by the cellular protoplasm. He thinks that the tubercle bacillus on its entrance into the organism is first attacked by the "microphages" or polymorphonuclear leucocytes; these are later joined by the "macrophages" which develop into epithelioid cells and which in turn form giant cells. In experimental tuberculosis he found giant cells containing bacilli, which from their staining characteristics and morphology, were evidently degenerated forms: this degeneration being due to changes brought about by the cells containing them. Miller is also convinced that the included bacilli undergo degeneration, for the reason that he has seen many of them colored black with osmic acid. Shüppel and Ziegler found various concentric, lamellated, calcareous, concretions in the interior of tubercle giant cells. These formations Metchnikoff regards as the result of the calcification of the tubercle bacillus in the interior of the cells, and a step in the process of the reaction of the giant cell against the contained bacillus.

Stschastny and Welcker also found degenerated forms of the tubercle bacillus in giant cells in experimental tuberculosis of the rabbit and guinea pig. Unna disagrees with Metchnikoff's view, that degeneration of the included bacilli is an indication of the phagocytic power of the

enveloping cell. He attributes this degeneration to the poisonous agent which has paralyzed the affected parts of the cell, and not to any activity of the giant cell itself.

Weigert, in direct opposition to Metchnikoff, Stschastny and Welcker, says that the forms, which the latter claim to be degenerated bacillary bodies, are merely artefacts, or else particles of a granular material having no relation whatever to the tubercle bacillus.

It is apparent that the question of the origin and nature of the tubercle giant cell is no nearer a satisfactory solution than it was when Langhans first suggested the theories of progressive nuclear division of cellular confluence. It seems, however, to be generally agreed that the cells, which either by confluence of the protoplasm or by nuclear division, give rise to the multinucleated masses, are those to which the name epithelioid has been given.

Before the discovery of the tubercle bacilli by Koch it was held by many, that the giant cell of tubercle owed its origin to metamorphosed blood vessels, but of late years this view has been practically abandoned for lack of supporters. In tuberculosis of the liver, Klebs thinks that many of the giant cells there found, are formed from the lining epithelium of the biliary ducts. A somewhat similar view is held by Arnold, who in miliary tuberculosis of the kidney and liver, found giant cells which were formed apparently by the confluence of neighboring epithelial cells lining detached portions of urinary tubules and bile ducts.

In connection with the giant cells of tuberculosis, Hektoen's studies have added greatly to our knowledge of the fate of these masses. He concludes that in the healing of non-degenerated tuberculosis tissue, the multinucleated giant cells may either disintegrate and subsequently become absorbed, or may divide again into smaller cells. The latter occurs more frequently. Under certain conditions after thus separating into smaller cells they may undergo progressive changes. This leads him to doubt the theory of Weigert and others that giant cells are necrobiotic elements doomed to destruction, and to support the teleological view held by Metchnikoff, that they are defensive plasmodia, in that they engulf and destroy the tubercle bacillus.

Unna in his work on the histopathology of skin lesions discusses at considerable length the nature of the giant cells found in lupus. He believes that the bacilli within the giant cells elaborate a poison which paralyzes certain parts of the cell. In the neighborhood of the nuclei this poisonous action is not only resisted, presumably as a result of nuclear influence, but the nuclei proliferate and elaborate an antitoxic substance which neutralizes the action of the bacterial poison. While nuclear proliferation lasts, he concludes, there can never be complete necrosis of the giant cell.

Concerning the foreign body giant cells which may readily be studied experimentally a large mass of literature is at hand. As their function appears to be to remove dead and useless fragments of tissue, or to surround and render innocuous particles of extraneous matter which have found their way into the tissue, they are seen under a great variety of conditions. The substances most frequently enclosed by them are bits

of hair, degenerated or cornified epithelium, cholesterin and fatty acid crystals, old pigment of the blood, extraneous insoluble particles, sutures, etc. To quote a few specific examples of but one type, suffice it to state that LeCount has described cholesterin giant cells in an old hydrocele, Meyer in foreign body peritonitis, Manasse in polypoid growths of the middle ear, Cramer and Schultz in a tumor of the eye and Ruge and Kruchman in sebaceous cysts.

One of the most interesting studies of foreign body giant cells is the experimental investigation of Faber. He introduced agar into the subcutaneous tissues of rabbits and observed the changes which followed. After various intervals he found about the particles of agar, leucocytes, epithelioid cells and giant cells. He found that the latter not only surrounded the small masses of agar but also sent processes into their substance. In some of his experiments he used agar impregnated with Berlin blue, and thus was able to obtain positive evidence that digestion was really taking place within the multinucleated cells, for it was easy to demonstrate that in such cells, in addition to the larger masses of foreign material, were many fine colored particles which had been broken off from the former in the process of its digestion. Indeed he saw some cells which contained only particles of Berlin blue and no large agar clumps.

Other experimental investigations have yielded similar results. Among the substances used in the experimental studies are small particles of sterile sponge, catgut, bits of glass, pollen grains, lycopodium spores and coagulated blood serum.

There are almost as many theories concerning the origin of these foreign body giant cells as there are writers dealing with the subject. Many authorities have reached the conclusion that the cells which take up foreign bodies are proliferating fixed tissue cells. Langhans in 1868 in his elaborate discussion of the subject originated the first theories as to giant cell formation, and, although somewhat modified, these still hold to-day. He suggests two possibilities: (1) that they may arise from a single cell by multiplication of the nucleus, or, (2) they may result from the fusion of many cells into one. To the former Dürck has given the name "proliferation giant cell" and to the latter "conglutination giant cell." Ziegler says that if the formation of giant cells is associated with an inflammatory reaction and if the proliferating tissue contains leucocytes, the latter may develop into giant cells by a division of their nuclei and act as phagocytes. Several German writers hold that it occasionally happens that mononuclear cells take up small foreign bodies into their substance and through continued nuclear division become converted into giant cells. Virchow concluded that foreign body giant cells were altered lymph vessels. Koster thought they came from the endothelium of blood vessels. Of late years, however, investigators have been in general accord in denying the vascular origin of the multinucleated cells, although one or two recent writers have brought forward the theory again. Weiss, who made a thorough study of this subject, concluded that the giant cells which he found surrounding foreign bodies were always formed by the confluence of the protoplasm of neighboring

cells, the latter being in most cases "granulation cells." Faber, as the result of his experimental subcutaneous introductions of agar, is positive that the giant cells which he noted were formed by the merging together of numerous epithelioid cells. Goldman regards the multinucleated cells which form around hairs in a dermoid cyst as arising from a single polymorphonuclear leucocyte by the division of its nucleus. On the other hand Buxton says that the leucocytes of the early invasion do not give origin to foreign body giant cells for several reasons: (1) because the latter are not seen until granulation tissue has begun to form, (2) their formation begins at that point of the foreign body which is nearest to the granulation area, and (3) in general their appearance both as regards nucleus and protoplasm closely resembles that of epithelioid cells. Marchand concludes that the cells in question are formed from epithelioid cells, which in turn develop from the endothelium of capillary blood vessels, thus indirectly returning to the views of Virchow and Koster that they arise from blood vessels.

Observation No. 1.—Multinucleated cells within the bronchi in bronchiectasis.

(*Records of the Pathological Department, University of Pennsylvania,* No. 01.46.*) *Autopsy by Dr. Pearce. Clinical Diagnosis:*—Pulmonary tuberculosis and pneumonia.

Anatomical Diagnosis.—Chronic interstitial pneumonia (diffuse); acute lobar pneumonia (right upper lobe); bronchiectasis, emphysema; general arteriosclerosis; chronic mitral and aortic endocarditis; hypertrophy of left ventricle; general chronic passive congestion; congenital hypoplasia of right kidney; compensatory hypertrophy of left kidney; chronic fibrous peritonitis; chronic fibrous pleuritis.

Lungs.—The lungs are smaller than normal and very firm. Posterior surfaces are covered by adhesions. On section there is seen a very definite diffuse increase of connective tissue. Throughout both lungs, but more especially in the lower lobes, are many closely set, minute cavities, apparently dilated bronchi, containing a thick mucus which is adherent to their walls. About these the new formation of connective tissue is very evident and often takes the form of grayish tubercle-like masses. There is a well marked dilatation of the air vessels throughout the lungs, especially along the anterior edges, where small blebs 2 to 3 mm. in diameter may be seen. The right upper lobe is prominent, of a grayish red color and completely solidified. On section it is grayish red in color, finely granular, and on pressure a large

*For the autopsy notes from which this abstract of gross findings is taken I am indebted to Prof. Allen J. Smith, of the University of Pennsylvania.

amount of yellowish-gray fluid escapes. In the midst of this solidification is a dilated bronchus 1.5 cm. in diameter. The bronchi contain a large amount of grayish yellow, and in some places, slightly greenish mucus disagreeable in odor.

Histological Examination.—Throughout all portions of the lung the air cells are largely obliterated and replaced by a very dense and very vascular connective tissue containing many lymphoid and plasma cells. In this tissue is a moderate deposition of carbon pigment. Special stains show it to be unusually rich in elastic fibres. The air cells which remain are enlarged. The bronchi, with the exception of the larger structures are for the most part greatly dilated and present very irregular outlines. In short the condition present is a chronic interstitial pneumonia with emphysema and extreme bronchiectasis, and, as the chief interest lies in the giant cells within the bronchi, the latter structures only will be described in detail.

Of the smaller bronchi a few are of normal diameter and some are collapsed, but for the most part they are greatly dilated. Their walls are greatly thickened and the mucosa irregular and convoluted. Into some the newly formed connective tissue has sent finger-like projections, these causing more or less invagination of the mucosa. The epithelium of the smaller bronchi is not infrequently separated from the underlying structures and thrown into reduplicated folds. The cells of these smaller tubes are of the low columnar type and stain deeply with hematoxylin. Not infrequently they penetrate in an irregular manner the surrounding tissue. All the bronchi with the exception of the very largest are partially filled with masses composed mainly of a thick hyaline mucus, with, in addition, polymorphonuclear leucocytes, epithelial cells and cellular detritus and a few red cells. The mucus which holds the mass together has in places a more or less fibrillated appearance, suggesting a fibrin network; elsewhere it is homogeneous. In the center or at the periphery of many of these masses are seen one or more large multinucleated cellular masses which vary considerably in appearance. In outline some are almost spherical, while others are very irregular or elongated. The irregularity is never so great as to suggest the presence of cell processes similar to those of the tubercle giant cell. The nuclei range in number from 2 to 80 or 100 and are oval and vesicular; the nuclear chromatin appears very plainly and takes a blue stain with hematoxylin, while the proto-

plasm stains a light pink with eosin. Many of the cells are vacuolated and the vacuoles contain in many instances a poorly staining granular material, the nature of which cannot be determined.

The nature and mode of formation of these multinucleated cells cannot readily be determined. A careful review of the literature reveals no mention of similar cells under like circumstances. They are not a manifestation of the lesions of tuberculosis or syphilis, and it cannot be shown conclusively that they are foreign body giant cells which have formed about mucus or detritus in the bronchi, though the occasional occurrence of crystal-like fragments within their protoplasm suggests such a possibility. As this possibility, however, presupposes the conglutination or proliferation of desquamated epithelial cells it is hardly worthy of consideration. It is, however, evident that they must in some way have been formed from the epithelium of the bronchi. Careful study of many preparations has shown that not infrequently small masses of the cells forming the epithelial lining protrude in sprout-like processes into the lumen. These cells lose more or less their cylindrical form and constitute an irregular arrangement of nuclei without distinct cell outlines. It is possible that these cell masses could become constricted at their bases and finally separate entirely from the mucosa and by contraction form round or oval multinucleated cells resembling giant cells, which in the fluid of the bronchi might retain for some time their normal staining characteristics. Such a mode of origin, however, cannot be demonstrated.

The possibility that these cells are but the tips of budding processes separated by the knife from the cell strands connecting them with the underlying mucosa, and therefore analogous to the multinucleated masses seen in the placenta, has been considered. A study of serial sections, however, has shown this not to be the case.

That giant cells commonly arise from epithelial cells is doubtful, but that they may do so is evident from a number of investigations. In tuberculosis of the intestine, Gaule thought that some, at least, of the giant cells originated in the epithelial lining of the tubules. Similarly Klebs and Arnold, as stated above, in tuberculosis of the liver and kidney, thought that the existing giant cells were formed from the lining epithelium of the bile ducts and the uriniferous tubules. Pearce in his study of experimental cirrhosis of the liver, found multinucleated masses, essen-

tially foreign body giant cells, since they were active in removing necrotic hyaline liver cells. These he declares are derived in part from endothelial cells and in part from liver cells. C. Friedländer, in a peculiar form of pneumonia to which he has given the name "Desquamative Hepatization," describes giant cells in the alveolar spaces, which he thinks originate from the lining of the alveola.

The occurrence of cells so typically of the giant cell type in such a place is so unusual that one hesitates to offer an explanation. It seems justifiable, however, in view of the fact that origin from either desquamated epithelium or the cells emigrating from the blood stream appears untenable, to conclude that they must be pinched off masses of excessively proliferating sprouts of the bronchial epithelium, which still retain more or less their natural staining characteristics.

Observation No. II.—Giant cells in a Carcinoma of the Tongue. (*Records of the Bender Laboratory, Surgical Path, No. 06-535.*)

The tumor was one involving the right half of the tongue, right tonsil and adjacent lymph nodes. It presented, except for extensive necrosis, the usual gross appearance and histologically was of little interest except for the presence of large numbers of multinucleated cells in and about necrotic epithelial pearls containing much kerato-hyalin. These cells lay in dense masses of lymphoid and plasma cells and in intimate contact with fragments of keratinized epithelial cells and oftentimes formed a perfect ring about smaller disorganized epithelial pearls. They had in some instances a round or oval outline, but the majority were very irregular, a considerable number sending elongated processes of their protoplasm into the surrounding tissue.

In the protoplasm many vacuoles are seen, some being free of all contents while others contain a variable amount of hematoxylin staining material. Not infrequently the material within the cells can be definitely recognized as fragments of degenerated epithelial cells. The vesicular nuclei, some of which are round, others oval, are situated as a rule at the periphery or at the poles, though an irregular arrangement is not uncommon. The larger cells contain 40 to 50 nuclei. There is no evidence of mitosis.

Concerning the occurrence of giant cells in epithelial tumors there is very little to be said.

In several cases of nævo-carcinoma, Unna describes giant cells, similar to those of tuberculosis in that their nuclei are

peripherally placed. Malherbes and Chenantais saw similar cells in epithelioma of the sebaceous glands of the neck. Krauss in 70 cases of epithelioma found giant cells in 10. He also found them in an epithelioma of the clitoris and in several adenomata. In an epithelioma in which calcification had taken place, Denecke also saw such cells. Krüchman observed them in carcinomata of the eyelid and of the œsophagus. Becher found multinucleated cells in several cases of lipoma and carcinoma of the upper and lower lips. Delamare and Lécène, out of a total of 250 epitheliomas examined, saw giant cells in 14, the majority being found in squamous cell carcinoma of the tongue, cheeks, larynx, œsophagus, tonsil, gums and cervix. Cramer and Schultz noticed similar cells in a pseudoglioma of the retina.

In some cases, as in the one here reported, the giant cells are scattered throughout the area of round cell infiltration and in close proximity to the masses of cornified epithelial cells or so-called "pearls." This association has suggested the possibility that they represent an attempt to remove the new growth and bring about a spontaneous healing. This question has been answered affirmatively and negatively by both French and German writers. That giant cells can surround and remove vigorously growing cells is very doubtful, but that they may take a part in removing cornified epithelium or other inert material, as they do elsewhere in the body, is very probable. Becher even goes further than this and says that it is the function of the giant cell to bring about organization of the "epithelial pearls" and their spontaneous healing, making it possible for them to be replaced by connective tissue. Unna thinks that the presence of giant cells in carcinoma suggest some infectious agent as the causal factor. In this connection it may be recalled that Unna describes multinucleated cells in various of the more uncommon skin lesions. He found in *Spiradenitis disseminata suppurativa*, a diffuse inflammation of the sudoriparous glands, that the epithelial cells of the ducts become swollen, separate and sometimes form multinucleated masses which he thinks are typical giant cells. Although unable after examination to find any specific micro-organisms, nevertheless, from the nature of the lesion, he thought that the condition pointed to an inflammation of infectious origin.

Mibelli, in acne keloid, found giant cells around the hair follicles. This led Unna to consider that this disease also was

caused by a distinct infectious agent the nature of which is unknown. In varicella, Unna also describes giant cells in the prickle cell layer of the epidermis, and on account of their peculiar form gave them the name "balloon" giant cells.

Observation No. III.—Giant Cells in a Recurrent Granulation Polyp of the Aural Canal. (*Bender Laboratory Records, Surgical Path. No. 06-332.*)

The gross appearance of the tumor, a small polyp, is of no special importance. Microscopically, it is in part necrotic with extensive leucocytic infiltration and in part composed of a matrix of newly-formed connective tissue with a small round cell infiltration. Here and there a slight amount of œdema is noticeable. Scattered throughout the latter tissue are a number of protoplasmic masses irregular in outline with no definite limiting wall and containing 3 to 15 oval, vesicular nuclei. The nuclei are arranged irregularly throughout the cells, in some, crowded together in the center, in others, at the poles or periphery. Many of these cells contain a granular material staining with hematoxylin and resembling epithelial debris.

The occurrence of giant cells in aural polyps has been reported several times. Krüchman describes one and Manasse nine cases of granulation polyp of the middle ear in which giant cells were found. Manasse decided that they are of foreign body origin and have nothing to do with the formation of the polyps as such. Since giant cells are very often found in chronically inflamed tissue we have no new condition here. They indicate probably the presence of foreign particles used in medication, or possibly desquamated epithelial cells or fragments of adherent cerumen.

Observation No. IV.—Giant Cells in the Wall of a Cyst of the Broad Ligament. (*Records of the Bender Laboratory, Surgical Path. No. 05-1304.*)

Macroscopically the specimen may be described as a cyst measuring 12 x 8 x 7 cm. with areas of subcapsular hemorrhage. The walls are quite thick and firm in consistence and the contents a dark brown mucoid fluid in which are mingled brownish friable masses. In several places the wall of the cyst is irregularly thickened and contains minute cysts.

Microscopic Description.—Sections through the cyst wall show two zones. The outer consists of old fibrous connective tissue with a large number of small blood vessels. The inner is

composed of young granulation tissue with its new blood vessels and small accumulations of leucocytes. Scattered profusely throughout this granulation tissue are small, round, oval or irregularly shaped hyaline masses, many of which are surrounded by multinucleated masses of protoplasm. These latter are of various shapes and sizes corresponding to the enclosed material. The nuclei are of the oval vesicular variety, the larger cells containing from 50 to 100. These nuclei are also varied as to their situation, some being massed in the center, a few at the periphery, while others are arranged at one or either pole. The enclosed material is apparently of a mucoid nature, which it would appear has become adherent to the granulating surface and surrounded in the process of repair, with the ultimate formation of giant cells about the less soluble particles.

It is interesting to note that in 1870 Langhans noticed somewhat similar phenomena about extravasated blood or blood introduced as a coagulum into the cutaneous tissues of various animals. In each instance the fluid portion of the blood was soon absorbed. Around the remains of the clot he saw multinucleated giant cells and was positive in asserting that absorption was due to the phagocytic action of the latter.

A few cases of giant cells found in connection with cyst formations have been reported by German writers. Goldman and F. König describe multinucleated cells in the walls of dermoid and atheromatous cysts, Bohm in a traumatic epithelial cyst, and Kühne in a cyst of the œsophagus.

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SPONTANEOUS AMPUTATION OF AN APPENDIX VERMIFORMIS CONTAINED IN A FEMORAL HERNIA SAC.

By FRANK GEORGE SCHAIBLE, M. D.,

Instructor in Pathology and Bacteriology, Albany Medical College.

(From the Bender Laboratory, Albany, N. Y.)

Within the past few years and especially since the time when the radical cure for hernia became customary, a large number of cases of hernia have been reported in which the appendix alone or accompanied by omentum, or omentum and intestine have been found occupying the sac. Previously, only isolated cases appear in the literature. Probably the first reported was that of Morgagni in 1751. Piersol, in 1901, collected 125 reported cases, and since that time a number of communications have appeared in rapid succession, describing instances of appendices found in the various hernial sacs, the greater majority being

found in right-sided herniae, especially the inguinal form. Edington, Bidwell, Eccles, Keetley and Southan have described cases in which the appendix was the sole occupant of the sac.

Most of the cases have been found at operation, while a few have been accidentally found at autopsy. It is now known that the appendix is present in about one or two per cent. of all hernias.

Hernia of the appendix may be either congenital or acquired. According to Hutchinson all the congenital cases are right sided and of the inguinal form. In the acquired forms the usual causes of hernia, as general enteroptosis together with the unusual mobility of the appendix are the main etiological factors. It is more common in children and advanced life than in early adult and middle age. According to Rivet's figures seventy per cent. occurred in men and thirty per cent. in women. The inguinal form constitutes seventy to eighty per cent. of all cases; the femoral twenty to thirty. Of the fifty-three cases of strangulated appendix in a hernia sac recently collected by Clogg three only occurred in males, and of these three, two were infants. Both were inguinal hernias—fifty occurred in women and in each instance the hernia was femoral.

Pathological conditions of the herniated appendix, especially those of an inflammatory nature, are not uncommon. "The tendency to inflammation of the appendix is greater than in the unherniated organ" (Jopson) and irreducibility, according to Bararde's statistics, is almost the rule. In his ninety-seven cases inflammation was found in thirty and strangulation in forty-seven. In many instances the symptoms supposed to be due to a strangulation of the hernia have been found to be due to an inflamed or gangrenous appendix, which had become adherent to a hernial sac. Eccles states that the inflammation of the appendix in these cases takes place after its prolapse into the hernial sac, and that the strangulation is secondary, being caused by an acute inflammatory process taking place in a confined space.

Kleberg describes a most interesting case in which the appendix was found in a left-sided hernial sac at operation. After having made the incision he noticed a gangrenous piece of tissue which later sloughed off, and was described by the pathologist as appendiceal tissue. Shaw and Stanton describe a case of hernia of the appendix in which the appendix was found to be intimately

attached to the epididymus. Wölfer and McArthur each report a case of cystic appendix in the sac of a hernia and Wood has called attention to the danger of rupture by taxis when a cystic appendix is in an inguinal hernia. Such an accident is reported by Van Hook. Various other interesting conditions of the in herniated appendix are possible, but all may be summed up by stating that conditions which may affect the appendix when in its normal position may affect the appendix also when within a hernia sac. We can find, however, no reference in the literature to the spontaneous amputation of an in herniated appendix and for this reason feel justified in placing on record such a case although the condition must be considered more as a curiosity than as one of clinical or pathological importance.

Case Report.—Mrs. M. E. G., aged 80, housewife, entered the Albany City Hospital, service of Dr. A. W. Elting on March 9, 1906. The family history is negative.

Past History.—The patient first noticed a small lump in the right groin about eight years ago. This swelling gradually increased in size until it reached the size of a goose egg and was recognized as a hernia. At first it gave rise to no symptoms, but later, on the entrance of a portion of the intestine into the sac, the patient would have a feeling of weight and suffer extreme pain. She was able at such times to reduce the hernia and would then be relieved. She has worn a truss for the past three years. The rupture "comes down" about every six or eight months.

Present Illness.—The patient felt perfectly well until she was taken with slight pain in the right groin, which increased in severity until it was so severe as to be intolerable. She did not vomit. The bowels were constipated and the hernia irreducible.

Operation.—With the patient in dorsal recumbent posture there presented a sausage-shaped tumor, well down in groin on the right side, which measures about 8.5 x 3.5 cm. An effort was made at reduction while on the table, but without avail. An incision was made over the tumor mass parallel with Poupart's ligament and the tissues separated and the hernia sac exposed. The sac was opened and found to contain three to four inches of ileum markedly congested and almost black. The neck of the sac was very tight, being of the size of a finger, and it was necessary to incise the constricting band somewhat. Some hot saline solution was poured on the gut and the color began to return with contraction of muscular fibres. The gut, after considerable effort, slipped back into the abdomen. What was considered as a peritoneal lipoma was attached to the inner surface of sac. On close examination of this mass was found what appeared to be a rather short obliterated appendix with smooth ends and without caecal attachment, which had apparently been amputated by pressure. To this was attached a definite mesentery. A considerable tongue of omentum was deligated along the sac. The patient made an uninterrupted recovery.

Gross Description of Specimen.—Attached to an apparently smooth serous membrane (hernia sac) measuring 3.5 cm. in diameter is an irregular mass of adipose tissue closely resembling that of the meso-appendix. Attached to this mass and slightly imbedded in it is a cord-like structure which measures 4 cm. in length and 0.5 cm. in diameter. Its surface is smooth, glistening, pinkish gray in color and it is rounded off at both ends. To these ends are attached by fibrous bands small masses of adipose tissue. Adherent to the hernia sac at its under surface by a long fibrous band is a piece of omentum containing considerable fat. *Anatomical Diagnosis.*—Hernia sac containing omentum and a portion of an appendix (spontaneous amputation).

Histological examination of the appendix shows the lumen to have been entirely obliterated and the mucosa completely replaced by fat and connective tissue containing a few lymphoid cells. The musculature is slightly atrophic, and there is a light infiltration of lymphocytes and eosinophiles. The peritoneal coat here and there shows many small hemorrhages. That the structure is appendix and not some other obliterated tubular structure or ligamentous mass is definitely determined by the character and arrangement of its outer coats. *Microscopic Diagnosis.*—Chronic obliterative appendicitis.

The only problem of pathological interest in this condition is the question of the sequence of the obliteration and amputation. It seems most probable that the obliteration of the appendix had occurred before the organ entered the sac, though of course it is not possible to exclude a gradual obliterative appendicitis occurring after its entrance. Under either circumstance it would appear to be quite certain that the amputation was due to the gradual constriction of the proximal portion of the appendix between the divisions of the fascia lata forming the boundaries of the femoral opening, this force being aided in part perhaps by the pressure of the truss. That the constriction leading to amputation as primary, or due to an acute inflammatory condition causing adhesions about the proximal portion of the appendix, appears very improbable, for under such circumstances we would expect either a cyst or empyema of the listal portion of the organ, or perhaps even necrosis, but certainly not an obliteration unless the adhesions involved the appendix throughout its entire length and on all sides, which was not the case.

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EXFOLIATIVE CYSTITIS. A CASE REPORT.

By J. FLETCHER ROBINSON, M. D.,

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(From the Bender Laboratory, Albany, N. Y.)

The literature of affections of the bladder offers so few examples of cystitis with exfoliation of large portions of the bladder mucosa, that it appears justifiable to report a condition of this kind recently observed by the writer. The expulsion of a part or the whole of the mucous membrane of the bladder occurs more frequently in women, though it may be seen, rarely, in men. It is usually associated with a cystitis occurring during pregnancy, or as the result of catheterization and irrigation. Boldt,¹ after a study of a few cases of his own and of several collected from the literature, concludes somewhat as follows:

Exfoliative cystitis is often associated with a retroverted pregnant uterus and usually manifests itself at the third or fourth month. About 50 per cent. of the cases are due to this cause. Other causes are, a retroverted myomatous uterus, the pressure made by a myoma choking the pelvis, retention of urine or the instillation of very strong, irritating solutions. The common factor underlying all the various causes is probably the ischemia produced by pressure, for cutting off or lessening of the vesical blood supply results in ischemic necrosis with or without infection. The caustic action of the ammoniacal urine in long-continued distention of the bladder may also play a part.

Exfoliative cystitis usually begins with abrupt onset. The detached membrane may be extruded entire or in small pieces; the mucous surface may be so altered by the necrotic changes that it is recognizable with difficulty, and its surface is often studded with uric acid crystals. Adhering to it are often more or less extensive portions of the muscular coat, and in the worst cases the peritoneal coat is also involved.

The prognosis is usually favorable except in those cases associated with sepsis. The treatment is usually that adopted for cystitis after correcting any displacements that may be present, and restoring the blood supply as nearly as possible to normal.

¹Boldt, *Am. Jour. of Obst.*, 1888, xxi, 361.

Dawson¹ reports a case of exfoliation of the bladder mucosa in a colored woman, the entire mucous membrane being passed *en masse* from the urethra

Norris² mentions a similar condition in a patient aged thirty-two, due to a virulent infection by the colon bacillus. As the acute symptoms subsided, two ounces of a five per cent. solution of silver iodide were introduced into the bladder once a day at the conclusion of irrigation. The patient improved slowly. After two weeks of treatment she was permitted to go home and was ordered to return on alternate days for treatment, but neglected to do so. One week after her discharge she returned with her urethra blocked by a sloughing mass as thick as a lead pencil, four inches of which were outside the external urinary meatus. The bladder was distended and the patient had been unable to pass urine for fourteen hours. With some difficulty an entire cast of the bladder was removed, followed by a gush of urine. Microscopic examination revealed portions of adherent muscularis. The entire specimen was undergoing necrosis.

H. C. Cochran³ observed in a woman four months pregnant a distention of the bladder to within an inch of the ensiform cartilage, accompanied by detachment and expulsion of the entire bladder mucosa. The cast was so perfect that openings corresponding to the ureteral orifices could be readily seen. The patient was able to leave the hospital in twenty days and recovered completely.

Schabert⁴ reports a case following the birth of twins.

In a case mentioned by Kelly,⁵ an over distention of the bladder followed ovariectomy and portions of the mucosa were cast off.

To these reports which, though they by no means cover the entire literature represent the more important types of exfoliation, I desire to add the following:

A folded and flattened membranous mass, preserved in alcohol and resembling in a general way in color and consistence a piece of folded gutta serena membrane, was sent by Dr. I. L. Goff of Howard, N. Y., on June 16, 1906, to the Bender Laboratory with a request to determine its nature.

¹Dawson, *Johns Hopkins Hospital Bulletin*, 1808, ix, 155.

²Norris, *American Medicine*, 1906, xi, 478.

³Cochran, *Medical News*, 1888, lxiii, 633.

⁴Schabert, *St. Petersburg. med. Woch.*, 1902, xix, 373.

⁵Kelly, *Operative Gynecology*, New York, 1906.

The accompanying letter stated that the patient from whom it was obtained was being treated for cystitis and had passed this substance from the urethra. The specimen, after being softened by immersion for some time in salt solution and spread out, may be described as a thin brownish yellow, irregular disk, uniform in thickness, translucent and slightly elastic and about six cm. in diameter. Microscopic examination of small portions imbedded in celloidin and stained with haematoxylin and eosin showed several imbricated layers of squamous epithelial cells arranged as are those of the normal bladder mucosa. These cells are in part necrotic and show no leucocytic infiltration. No subepithelial structures are present.

From notes furnished by Dr. Goff the following brief history was obtained. The patient, a married woman of about 40 years of age, a schoolteacher by occupation, had had two previous attacks of cystitis. During the attack characterized by the exfoliation here described she was under treatment for about one week, receiving internally, salol, acetate of potash and fluid extract of corn silk with sufficient codeine to relieve the pain. Hot normal salt solution irrigations was used at first, and later a solution of boric and tannic acids and morphine as hot as could be borne. The bowels were kept open with salines. Recovery was rapid, and no recurrence was reported. There had been two previous attacks, which were mild and unaccompanied by any exfoliation of mucous membrane.

In view of the scanty history it is impossible to arrive at any definite conclusion concerning the cause of the exfoliation. The absence of leucocytic infiltration in the material examined and also of any record of an examination of the urine forbid a statement concerning the presence of an inflammatory condition. The absence of pregnancy rules out one of the usual causes. The solutions used for irrigation are not such as usually cause injury, though Boldt quotes a case of Begonin's in which exfoliation was due apparently to the use of normal salt solution. It is possible that very hot solutions might cause necrosis and exfoliation of the mucosa, but in this instance there is no evidence that the irrigation caused the patient discomfort, as would necessarily be the case under such circumstances.

MALARIA WITH GENERAL DISTRIBUTION OF THE PLASMODIA.

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(From the Bender Laboratory, Albany, N. Y.)

Records of the microscopic study of the lesions of malarial infection are, as stated by Ewing,¹ not very numerous, and much yet remains to be learned of the parasitology of the disease from microscopic studies of the visceral lesions. It has therefore seemed worth while to report the following case in which large numbers of the parasites were found in many of the organs and tissues.

*Bender Laboratory Records, Autopsy No. 535.**

Anatomical Diagnosis.—Pernicious malaria with general pigmentation most marked in the liver and spleen. Marked enlargement of the spleen. Hematogenous jaundice. Submucous hemorrhages of the stomach. Pigmentation of the mucous membranes of the stomach and intestines and of the pancreas. Cloudy swelling of the kidney, liver and heart. Chronic pleuritis (left). Hypostatic congestion and slight oedema of lungs. Atheroma effecting the bases of the mitral and aortic valves and the aorta and coronary arteries. Grayish pigmentation of the cortex of the brain. Presence of malarial parasites in the capillaries throughout the body.

The *skin, serous and mucous membranes*, including the conjunctiva are all very yellow, as are also the fatty tissues generally.

Liver.—27 x 16 x 10 cm. The capsule is smooth and of dark color. On section it is slate gray in color with indistinct markings. No necroses are seen. The gall-bladder measures 3.5 x 1.5 cm. and contains dark viscid bile. The bile ducts are patent.

Spleen.—6.5 x 5 x 2 cm. The capsule is smooth and free from adhesions. On section the organ is firm in consistence, deep purple in color, with prominent Malpighian corpuscles.

Kidneys.—Both are about the same size, approximately 11 x 6 x 4 cm. The capsule strips with some difficulty, bringing with it portions of the kidney substance, yet the surface for the most

*No clinical history could be obtained. The subject, a traveller, passing through Albany, was found dead by the hotel attendants. At the request of the coroner the autopsy was made by the writer. Only the anatomical diagnosis and those changes apparently due to malaria are given in the description of the autopsy.

part is smooth. On section the organ is firm and lighter in color than normal. The cortex is narrow.

Pancreas.—Measures $18 \times 3 \times 1$ cm. On section it is bluish gray in color, otherwise appears normal.

Stomach.—In the mucous membrane of the stomach are numerous pin-point hemorrhages covering an area of 10 cm. in diameter.

Intestines.—The mucous membrane of the small and large intestines is slate gray in color.

Brain.—There is grayish pigmentation of the cortex of the brain.

Microscopic Examination.—Fresh smears made at the time of the autopsy from the *brain*, *bone marrow* and *spleen* show numerous intracellular parasites. These usually have the form of small spheroids, staining blue and enclosing coarse masses of brownish black pigment. In the larger forms the pigment is more scattered and finer grains are seen. No ring bodies, rosettes or crescents are found.* Sometimes a red cell contains more than one parasite. Phagocytic cells containing pigment are also seen.

Sections of various organs after Zenker and alcohol hardening were studied.

Spleen.—The pigment deposit is very extensive. Much of it is in dense masses within large phagocytic cells. There is cellular hyperplasia of the pulp tissue and the sinuses are choked and obliterated by pigmented cells. The nonpigmented cells of the Malpighian bodies stand out prominently. A very large proportion of the red cells of the pulp contain pigment or parasites. Pigment is also found within the leucocytes. The large phagocytic cells referred to are mono-nuclear, where a nucleus can be made out.

Liver.—The parasites are very numerous. They are englobed in free red cells in the capillaries or, more often, enclosed in large phagocytes together with degenerated parasites, red cells more or less degenerated, and pigment in the form of large brownish black masses and fine brownish grains. The large phagocytic cells are mono-nuclear, some of them are combined in the large protoplasmic masses described by Ewing. These fill and distend

*Parasites seen in fatal cases of acute malarial infection are only very rarely of the tertian type. Italian observers have claimed that tertian malaria is never fatal. Ewing has however reported a case. The aestivo-autumnal parasite is the one usually found and the one probably present in this case through this could not be demonstrated.

certain of the capillaries. The parasites are very much more numerous in the capillaries, nearly every red cell in which is infected, than in the larger vessels where only comparatively few of the red cells contain pigment. The liver cells show albuminous degeneration. In many of them are seen numerous fine yellow granules very different in appearance from the malarial pigment. No typical malarial pigment is found in any of the liver cells.

Bone-marrow.—The cellular hyperplasia is marked, comparatively little adipose tissue being seen. The pigment deposit is extensive but not as marked as in the liver and spleen. The pigment is found especially in large mono-nuclear cells, in the form of dense circular and irregular masses and in fine granules. A larger proportion of the red cells are uninfected than in the spleen. Pigmented spheroidal bodies are seen which are probably free parasites. Here as elsewhere no ring forms, rosettes or crescents are found. No infected nucleated red cells are seen. Eosinophilic myelocytes are numerous. The changes in the bone marrow are, in general, of the first of the two types of marrow changes described by Ewing.

Lymph Nodes.—The lymph nodes contain a moderate number of pigmented red cells. Various phagocytic cells containing pigment are also noted. Cellular hyperplasia is present and the sinuses are obliterated.

Lungs.—The capillaries here as in other organs contain immense numbers of the parasites. In many of them practically every cell is infected. The infected cells are massed in the capillaries, the larger blood vessels being comparatively free from them. Large phagocytic cells are seen distending certain of the capillaries. These cells contain masses of pigment and red cells more or less degenerated.

Cardiac Muscle.—The muscle cells show only cloudy swelling. Very large numbers of parasites are found in the capillaries. Phagocytic cells are few.

Kidney.—The intertubular capillaries contain moderate numbers of parasites. Phagocytic cells containing pigment are only rarely seen. The kidney cells show moderate degenerative changes of the albuminous type. Pigmented phagocytes and infected red cells are found in the Malpighian tufts.

Intestines.—Numerous parasites are seen in the capillaries in the mucosa and in those of the muscular fatty and connective

tissues. In certain areas the epithelial cells are necrotic and there is an infiltration of round cells in the deeper layers of the mucosa. Occasional phagocytes containing pigment are seen in the capillaries.

Pancreas.—Here, also, are numerous parasites and many phagocytes containing large and small pigment granules. These are exclusively in the capillaries, no pigment being found in the parenchyma.

Brain.—Enormous numbers of parasites are found in the capillaries, nearly every red cell being infected. They are less numerous in the larger vessels. A few phagocytes containing pigment are seen.

The pathology of malaria is summed up by Mannaberg as follows: "The anatomic characteristic of acute malaria is melanemia. Microscopically this is evident in the greyish brown to graphite color of certain organs, as the spleen, liver, brain and kidneys. The pigment is found in parasites or in tissue cells (leucocytes, macrophages of the spleen, endothelial cells, marrow cells, more rarely in the parenchymatous cells of glandular organs as the liver). The distribution of the pigment in the internal organs is not uniform. It is found in the capillaries rather than in the large vessels. Dead substances like powdered glass or cinnabar if injected into the circulation distribute themselves uniformly, while bacteria show a predilection for certain situations and for certain organs. This seems to be true of the malarial parasite. The distribution varies in different cases." This is well illustrated in the study by Ewing of material collected at Camp Wikoff, Montauk Point, L. I. He reports nine cases with clinical histories and autopsies. He found that the distribution of the parasites in the internal organs was not uniform. In one case, for instance, no parasites were found in the brain, while a very abundant deposit of pigment was seen in the kidney; in another a very large number of parasites occurred in the viscera, generally, especially in the heart muscle. Still another showed a concentration of parasites in the central nervous system; in this case severe degenerative changes were present in the kidneys, though parasites were absent from the renal vessels. One case showed localization of parasites in the bone marrow.

It is generally believed that in typical cases the spleen is the first seat of malarial infection. This is borne out by the results

of Craig's autopsies on the bodies of individuals dead of latent malarial infection. In these the parasites were practically localized in the spleen and had not even been demonstrated in the blood during life, though careful search had been made. The liver showed melaniferous leucocytes, but no infected red cells. Saigol reports an autopsy in a case of malaria with congenital absence of the spleen. In this case the infection attacked the mesenteric lymph nodes, which showed marked hypertrophy. Hypertrophy of the suprarenal glands was also present.

Leonard Rogers has called special attention to the frequency of pigmentation, visible to the naked eye, of the mucous membrane of the small intestine. He found it to be present in fourteen out of twenty cases examined. He believes that the continued presence of the pigment in the mucous membrane eventually causes degenerative changes and appears to be a very important factor in producing the high mortality in malarial cachexia. In the early stages the villi show in addition to deposits of black pigment, a considerable degree of thickening and distortion produced by a cellular infiltration. Changes are also found in the deeper layers of the mucous membrane; in some cases the tube glands have nearly disappeared, while their place is taken by a dense cellular infiltration. On the other hand, the muscular layers show little change. The degree of loss of absorptive and secretory power of such a membrane must be considerable. In advanced stages the process goes on to the formation of fibrous tissue and the mucous membrane becomes much atrophied.

In the case here reported the parasites have a wide distribution, being found in practically every organ. The pigmentation is very marked in the spleen and liver and brain. The changes in the intestine are similar to those described by Rogers.

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BENDER HYGIENIC LABORATORY.

ANNUAL REPORT OF THE DIRECTOR FOR THE YEAR ENDING
AUGUST 31, 1906.

To the Trustees of the Bender Hygienic Laboratory:

I have the honor to submit my report for the year ending August 31, 1906.

The Work of the Laboratory.—The routine examinations of all kinds are summarized in Table No. I.

TABLE NO. I.—ROUTINE EXAMINATIONS MADE BY THE STAFF OF THE BENDER LABORATORY FROM SEPTEMBER 1, 1905, TO AUGUST 31, 1906.

	State Depart- ment of Health.	City Depart- ment of Health.	Albany Hos- pital.	St. Peter's Hospital.	Child's Hospital and St. Margaret's House.	All other sources.	Total.
Autopsies.....			40	4	26	50	120
Surgical Specimens.....			1,040	280	10	141	1,471
Throat cultures.....	819	877				18	1,714
Sputum.....	423	34	1	2		72	532
Widal.....	150		72	36		39	297
Water, milk and ice.....	300					30	330
Miscellaneous.....	5	20				63	88
Totals.....	1,697	911	1,173	322	36	413	4,552

This shows an increase over each of the preceding two years, of the work done for the Albany and St. Peter's Hospitals and for the City Department of Health, but a decrease in that done for the State Department of Health. There is also an increase in the number of examinations made for private individuals and the smaller hospitals. The total number of examinations is more than one-third greater than that for either of the two previous years. This increase has been mainly along lines of surgical pathology and clinical bacteriology.

As this report marks the completion of the first decennial period of the existence of the laboratory, I have been interested in working out the amount of work done during this time. The results as given in the following table show a very satisfactory and definitely progressive increase in all lines of work. The figures are based on the examinations for each year ending August 31, and includes only those examinations of which we have records on file.

TABLE NO. II.—TABLE SHOWING THE PROGRESSIVE INCREASE OF THE WORK OF THE LABORATORY DURING THE FIRST TEN YEARS OF ITS EXISTENCE.

	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	Totals.
Autopsies.....	63	66	93	92	117	123	114	123	129	120	1,040
Surgical Specimens.....	160	163	148	399	527	641	590	1,003	1,271	1,471	6,373
Bacteriology and Clinical Microscopy.....	441	367	335	789	1,595	1,977	2,120	2,515	2,683	2,961	15,783
Totals.....	664	596	576	1,280	2,339	2,741	2,824	3,648	4,083	4,552	23,195
Laboratory Courses.....	3	3	3	3	3	4	5	6	6	6	.....
Publications.....	2	7	8	9	10	3	8	11	8	17	83

Laboratory courses for undergraduates of the Albany Medical College have been given as follows:

1. Normal Histology.—Drs. Baldauf and Beilby, six hours a week.

2. Pathology and Bacteriology.—Drs. Pearce, Winne, Baldauf, Blackfan and Robertson, eight and a half hours a week.

3. Clinical Microscopy.—Drs. Laird and Frederick, five hours a week (class in two sections).

4. Surgical Pathology.—Drs. Elting, Carey and Sibley, two and a half hours a week.

5. Histology and Pathology, in connection with the course in Obstetrics.—Dr. Lipes, five hours a week (class in two sections).

6. Anatomy and Pathology of the Nervous System.—Dr. Archambault, one and a half hours a week.

The only change during the past year in the conduct of these courses has been the division of the class in clinical microscopy in two sections, each section working on different days in order to allow more detailed instruction. The time devoted to the work in anatomy and pathology of the nervous system has been lengthened for the year 1906-07 to two hours. As the pathology of the nervous system will in the future be more fully covered in this course, the time given general pathology has been shortened to seven and one half hours a week, while the time devoted to normal histology has been limited to five hours. Both these changes were necessary also in order to give place in the schedules of the first and second years to the two courses in experimental physiology to be inaugurated this year under the direction of Dr. H. C. Jackson, and for which facilities are available only in this laboratory.

Among those who have availed themselves of the opportunity to work in the laboratory for considerable periods of time are, Dr. D. C. Moriarta of Saratoga, Dr. Warren B. Stone and Mr. Rufus T. King of Schenectady, Drs. C. B. Hawn and J. D. Olin of Albany, Dr. J. S. Purdy of Auburn, Miss H. C. Acheson of Troy, Messrs. E. E. Tredway, J. F. Robinson, J. H. Linden, E. W. Fuller, R. P. Harris, N. K. Fromm, E. W. Jackson, G. S. Silliman and S. P. Brush of the Albany Medical College, and Mr. J. H. Musser, Jr., of the University of Pennsylvania. These have assisted in the routine work of the laboratory, pursued special lines of study or engaged in research work.

Investigations completed during the year are as follows:

1. McDonald, Ellice, Puerperal Infection; Report of Six Cases Illustrating its Varied Character. *American Medicine*, 1906, XI, 231.
2. Pearce, R. M., A Further Study of the Experimental Production of Liver Necrosis by the Intravenous Injection of Hæmagglutinative Sera. *Jour. Med. Research*, 1906, XIV, 541.
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10. Baldauf, L. K., The Chemistry of Atheroma and Calcification (Aorta). *Jour. Med. Research* (in press).

11. Pearce, R. M., and Jackson, H. C., Concerning the Production of Cytotoxic Sera by the Injection of Nucleoproteids. *Jour. Infect. Diseases* (in press).

12. Jackson, H. C., and Blackfan, K. D., Action of Certain Drugs on the Elimination of Uric Acid During a Nitrogen-Free Diet. *Jour. Am. Med. Assoc.* (in press).

13. Schaible, F. G., Spontaneous Amputation of an Appendix Vermiformis contained in a Femoral Hernia Sac. *Albany Medical Annals* (in press).

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16. Laird, A. T., Malaria with General Distribution of the Plasmodia. *Albany Medical Annals* (in press).

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Of these investigations, the second, third, sixth, ninth, tenth and eleventh were conducted under a grant from the Rockefeller Institute for Medical Research, and the twelfth under a grant

from the committee on scientific research of the American Medical Association. Study number five was carried out in collaboration with the Antitoxin Laboratory of the New York State Department of Health.

Changes in the Staff.—Dr. L. K. Baldauf, first assistant for the past year, has been reappointed for the year 1906-7. Dr. K. D. Blackfan, after one year's service as assistant, has resigned, to take up general practice in Cambridge, N. Y., and in his stead Frank George Schaible (Albany Medical College, M. D., 1905) has been appointed. Dr. La Salle Archambault is continued as assistant in Neuropathology. Dr. H. E. Robertson, assistant in surgical pathology, resigned May 1 in order to accept a position as assistant resident pathologist at the Boston City Hospital, Boston, Mass., and to this position has been appointed John Fletcher Robinson (Univ. of Michigan, B. A., 1903, Albany Medical College, M. D., 1906).

The new position of pathological house officer to the Albany Hospital, created last year, was occupied first by Dr. William M. Dwyer, and later by Dr. F. G. Schaible. For the year ending May 30, 1907, C. W. Louis Hacker (Albany Medical College, M. D., 1905) has been appointed by the board of governors of the hospital.

Mr. Leonard M. Wachter, for several years assistant chemist and bacteriologist in charge of the Albany filtration plant, resigned on September 1st, to accept a position in the laboratory of the New York State Department of Health, and to this position, with the approval of the water bureau, has been appointed Mr. George Edward Willcomb (Massachusetts Institute of Technology, S. B., 1904).

Improvements.—The only important changes have been the alteration and equipment of a room for research work in physiological chemistry for the use of Dr. H. C. Jackson, and the installation of a one-half horse power electric motor and pump, in order to supply vacuum and air pressure for general laboratory purposes.

Gifts.—Through the generosity of Dr. W. G. Macdonald, one hundred dollars was placed at our disposal for the purpose of purchasing a polariscope. The great value of this gift is shown

in the fact that the apparatus has already made possible the completion of an investigation otherwise impossible, and will in the future serve a useful purpose in both the teaching and the routine work of the laboratory.

The past year has been from every point of view the most successful in the history of the laboratory. The importance of our relation to the hospitals and physicians of this neighborhood, as well as to the community generally, is indicated by the large number and variety of our routine examinations. The teaching courses, now numbering six and next year to be increased to eight, have been most satisfactory, and the value of the facilities thus afforded the Albany Medical College are apparent. The quantity and quality of our research work, as indicated by the foregoing list of publications, will, I trust, appeal to you as of great value to the future, not only of the Bender Laboratory, but also to the medical school with which this laboratory is affiliated. With this evidence before you of the satisfactory fulfillment of all the functions of a laboratory, I earnestly recommend that every effort be made to obtain for the institution an adequate financial support, in order that its efficiency may not be curtailed or its development hindered.

RICHARD M. PEARCE,

Director.

September 1, 1906.

ALBANY MEDICAL ANNALS

Original Communications

WHAT SHALL WE EAT? WHAT SHALL WE DRINK? AND HOW SHALL WE BE SAVED?

*Read before the Medical Society of the County of Albany, December
12, 1906.*

By GEORGE S. EVELETH M. D.,

Little Falls, N. Y.

Mr. President and Gentlemen:

Generally speaking the conditions necessary for good health and a long life are few. Given a constitution free from undesirable inherited tendencies and plenty of fresh air and sunlight, pure food and a protection against heat and cold, a proper amount of exercise and the individual may reasonably expect to live out his allotted years free from pain and the limitations which so often accompany old age.

These same conditions existed when the human race was in its infancy and they exist to-day modified by the social exigencies of the race.

We have the same pure air, except in those localities where it has been polluted by the agencies of man. We have the same health-giving sunlight that exists everywhere unless shut out by man. Most of us are of necessity compelled to exercise enough in order to supply our wants. But food and shelter are things over which the great majority of people have no control and have to accommodate themselves with whatever happens to be furnished by others. The time has far gone by when man's whole work was to obtain and prepare the food for his meals by day and retire to the dwelling made by his own hands at night.

The multiplication of the human race has changed this primitive but healthful manner of life, and now we find great numbers of people crowded together in cities, doing some one thing for a livelihood and entirely dependent on others both in regard to their dwelling place and their food and, strange to say, in these Christian and altruistic days, the habitation and food have been furnished to the people without regard for their health, but entirely for revenue only.

Public attention has lately been called to the food question, as the one most in need of regulation and the one most quickly and effectively remedied by legislation. You are all doubtless familiar with the provisions of the Pure Food Law recently enacted by Congress and will agree that it was a much needed reform.

I believe that there is no more important subject in the whole realm of medicine, or one that deserves more careful consideration at the hands of the profession, than a study of the proper food for man, as he exists to-day, influenced by the complexities of his present civilization, and I wish to refer briefly to some phases of the question.

We know that the majority of illnesses of infancy and childhood are caused by improper food. We know that many of the acute illnesses of adults are caused by dietetic errors. Why, then, is it not fair to suppose that the most of our chronic ailments are caused by the same gastronomic errors committed, it may be three times a day, and extending over a whole lifetime.

The process of eating and digesting our food is, at present, the most artificial of any of the vital processes. We eat when we are not hungry and we know not what we eat. We have had to depend upon the honesty of the ones who furnish our food, and it has been proven that they are dishonest. We eat too much oftentimes, and we strive to see how many different varieties we can have at the same meal. We eat too much meat. Meat contains the purin bodies which cause gout and arterial sclerosis, perhaps some anemias, and altogether have a deleterious effect on the general vitality. We eat hurriedly while thinking of other things, and then rush off to work and leave our digestion to go on as best it may.

Breathing impure air for a short time only, will cause a feeling of depression and headache, and if long continued will cause organic changes in the body, evidenced by anemia and an in-

creased susceptibility to tuberculosis. Eating impure and improper food causes all sorts of symptoms, some directly referable to the stomach and some reflexly affecting other organs and varying in degree from a vague feeling of discomfort to actual illness. Continued three times a day and year after year, and what ought to be a normal healthful process becomes an important pathological factor. How long would we live if the air we breathe was a manufactured product and we had to buy of competing firms, or if our sunlight was controlled by a trust?

The water we drink is so pure and plentiful, when not contaminated by man's filth, that even our modern enterprising pharmaceutical houses have never attempted a substitute. But the food we eat nobody has taken any interest in until of late. Man has lost even the instincts of the lower animals in regard to the selection of his food. There is only one species that I can think of that is less fastidious, and that is the hog. The Biblical injunction that admonishes us to take no thought of the morrow what we shall eat or what we shall drink, has been followed more religiously than many another more worthy of our obedience, and perhaps furnishes us with the most charitable explanation of the utter indifference with which the average man regards his food. If he gets it at the regular hour and in sufficient quantities all the requirements are fulfilled, and the man who has any regard about the palatability of his food is looked upon as an epicure or a glutton, and the man who considers the digestibility of his food is looked upon as a crank. This is indeed unfortunate.

Why not continue the study of proper foods through life when it has brought such marvelous results in infancy? In 1881 in New York City the mortality among children under five from diarrhoeal diseases was thirty-three to one thousand; in 1905 it was fourteen to the thousand. What saved in 1905 the lives of twenty infants out of every one thousand who would have died in 1881? The answer seems too simple to be true: cleaner milk. And if every infant were fed on absolutely pure milk the mortality from diarrhoeal diseases would be practically nothing. But absolute purity of milk is unattainable and if you could see the indignities that milk is subjected to, this very milk that goes to New York by the train load, you would wonder that the infant mortality had been reduced at all. If you could see the unclean hands of the milkers and the unclean udders of the

cows and the unclean stables, the dirty wagons which are used sometimes to haul the milk to the station and sometimes to haul manure into the fields, see the can covers accidentally come off and roll round in the dirt of the street or the manure of the cart and be put back on again without any attempt at cleansing,—if you could see the absolutely filthy water in which the cans are washed, I know you would say that every city ought to compel all vendors of milk to have their milk examined every day. I believe the milking machine which is coming rapidly into general use will do more than any one thing towards making cleaner milk.

The Department of Agriculture gives in the appendix to this present year book the analysis of sixty-seven samples of commercial food preservatives in common use; thirty-three of these samples contained borax or boracic acid; ten, sodium, potassium or calcium sulphate; eight, salicylic acid or its sodium compound; seven, benzoic acid; one, boric acid and ammonium fluoride; three, formaldehyde; one, ammonium fluoride; two, pyroligneous acid, and one, beta naphthol. These are the chemicals we have been getting with our food. If it is necessary to use these preservatives at all in food the public should be informed what drug has been used and in what proportion. No wonder that in almost every paper we take up we read of cases of illness caused by impure food. Since October 1st of this year I have had my attention called to thirty-five instances of food poisoning involving one hundred and twenty-five individuals and causing five deaths. It is fair to suppose that only a very small percentage of such cases ever get into the newspapers. The list contains milk, meat, cheese, catsup, canned goods, ice cream, sausage, fish, mince pie, cream puffs, candy, canned chicken and uncanned chicken. Chicken seems especially prone to cause acute illness, and I believe it is due to the fact that most chickens sold in the market remain undrawn for a longer or shorter time; at any rate long enough for the poisons generated by the fermenting and putrefying contents of the intestinal tract to permeate the entire tissues of the fowl. You are all probably familiar with the cases of acute indigestion that so often occur after a church chicken pie supper.

Dr. Wiley, the Chief Government Food Chemist, at Washington, relates his experience with the cold storage chicken in the *Boston Medical Journal* of a year ago. He says he asked for

spring chicken in the dining car of one of our best railroads (I don't know whether it was the one which was recently arrested for serving milk preserved by formaldehyde or not), and the waiter brought him what he said was spring chicken, but of what spring? The chicken was not fit for any human being to eat. He called the superintendent of the dining service and said to him: "Why do you serve such chicken as this? You know that it has been in cold storage for three or four years, and is a menace to the health of any person who eats it?" "What do you expect for a dollar?" was the only reply he received.

Cold storage men will tell that April cold storage eggs are more trustworthy than the average so-called fresh egg of the retail grocer in the summer months. If this is so, why don't they avail themselves of the advertising advantages of the wine merchants and date their eggs and leave it to the public to decide whether the bouquet of the eggs of the spring of 1905 is superior to the freshly laid? They will also tell you that an undrawn fowl will keep better than a drawn one, because less surface is exposed to the air, but if they are correct, that fact does not make the cold storage chicken any more suitable for an article of food. Decomposition of organic matter begins when it is deprived of life and in the case of an undrawn chicken this process is hastened by the presence of fermenting and decomposing contents of the alimentary canal. I have seen the skin over the crop of a fowl turn black and begin to slough in less than twenty-four hours after death, and as it is usually several days before they reach the cooler, by that time the contents of the whole intestinal tube is decomposing and swarming with bacteria and their ptomaines. Even if this decomposition is rested while they are in storage, it begins again when they are taken out; and when the bird is put into warm water to plump it out and make it look fresh, these poisons are distributed thoroughly through all the different tissues. Dr. Cavana of Oneida has just finished experiments on one hundred specimens of undrawn cold storage chickens purchased in the open market. Cultures made from the breast and leg meat of every one showed the presence of intestinal bacteria, they all contained the colon bacillus, sixty-five per cent. showed streptococcus infection and twenty per cent. showed staphylococcus infection. He has also proven experimentally that the entire tissues of an undrawn fowl will become infected in four and one-half days after death at a

temperature of 40° F., or in twenty-four hours at a temperature of 70° F. But if the fowl is drawn and placed in a temperature of 40° F. no groups of intestinal bacteria appeared for twenty-eight days, and at a temperature of 70° F. none appeared for fourteen days.

It seems to me that it would be only fair to compel hotels and restaurants and markets to publish in some public manner the fact that the eggs and poultry they use and sell are of the cold storage brand; and if the customer could see the vile smelling, putrid greenish liquid that is removed when the entrails are taken out and see the cleansing and deodorizing processes that must be gone through with before the chicken is fit to be cooked, I have no doubt that he would choose the freshly killed instead of the one that has been dead for months or even years.

The man who pays a dollar for his dinner has a right to know what he is eating and when he sits down to a dinner advertised as including all the delicacies of the season, he has a right to know when they were canned. Under the existing conditions it is impossible for a man to use what intelligence he has; he simply has to eat what is set before him and ask no questions.

Concerning the second division of my subject I will only say what I believe is the opinion of the medical profession, that over-indulgence in alcohol is always harmful, and is in no small degree responsible for many of the pathological conditions peculiar to the times. Personally, I believe there is some truth in the old saying that a man is a fool who uses whiskey before he is fifty, and a fool if he doesn't use it afterward, in medicinal doses. How else are we able to explain the voluntary testimony of all the superannuated ministers, jurists and ex-governors who have indorsed Peruna? It is manifestly unfair to accuse them *all* of being dishonest. Most of these venerable men, judging from their pictures in the press, have led sedentary lives and in their years of declining activity alcohol in medicinal doses has quickened their circulation and their respiration and increased their elimination. In other words, they have taken their exercise in liquid form out of a Peruna bottle, and it has done them good. But they ought to have known that alcohol by any other name would have done as well.

In our arraignment of alcohol we must not forget the cherry, which is, I believe, sometimes closely associated with it, and

which according to the chemists has been bleached with sulphur soaked in brine, filled with glucose, colored with aniline and flavored with prussic acid.

The medical profession has been very prone of late to attribute sudden breakdowns in what ought to be the prime of life to the manner of living, popularized and exemplified by President Roosevelt, namely, the strenuous life. When a railroad president or a captain of industry or a high financier is cut off in middle life, they say too much work and worry, too intense application to business. One of the first questions asked by the eminent consultant, when called to see one of these worn-out patients is: "Have you had any sudden shock—any great grief, any financial reverses, or, have you undergone any prolonged mental strain?" But work and worry are not new to the human race. The strenuous life is not, I fancy, peculiar to this day and generation. The history of all ages contain egregious examples. Noah in his sober moments must have had an overwhelming sense of his responsibility—all creation on his passenger list and no port in sight, and yet he lived 595 years. Daniel in the lion's den must have had his nervous sensibilities shocked as much as they would be by the bulls and bears of Wall Street. And Jonah, as he sat three days draped in the mucous folds of the whale's belly must have been as much depressed as he would be by a slump in the market. Yet they lived to be very old. And Moses, you remember, was eighty when he undertook the spiritual and material leadership of 600,000 people in their forty years' journey to the promised land.

The strenuous life is the natural life. It is the means by which we gain new powers. It has raised man from savagery to civilization and yet it is the popular explanation of the increasing frequency of arterial sclerosis, nephritis, cardiac paralysis, diabetes, apoplexy, neurasthenia, and many another disease which makes us old when we are young and either limits our activities or brings untimely death. Dr. Gilman Thompson has said that it is rare to find a man of thirty in his wards in Bellevue who does not present advanced evidences of arterial sclerosis. These patients can hardly be said to have come from the strenuous walks in life, and if their sclerosis is laid to alcohol or syphilis it may be said that there are plenty of men who have never been exposed to either of these poisons who are old men at forty.

The pathology of many of these diseases is the same; it is simply the replacement of the higher and specific cell of a tissue which has become atrophied by a hypertrophied connective tissue cell. It would seem that some poison had been at work, for we know that certain poisons will cause these changes.

Dr. Metchnikoff of the Pasteur Institute says this poisoning comes from two causes; first, from poisons introduced into the system through improper and impure food, and second, from poison manufactured by the flora of the large intestines derived mainly from phenol and indol and that series. The bacteria of the large intestine was necessary in the early development of the race when we were having to digest large quantities of cellulose, but now they do absolute harm by manufacturing certain poisons which are absorbed and which cause sclerosis of the various tissues. He says mammals with their long, large intestine have relatively shorter lives and show signs of old age sooner than other animals, like birds, that have no large intestine at all. He says we have inherited certain anatomical handicaps to our digestive organs from our animal ancestors, notably the appendix and the large intestine. The former is being attended to quite assiduously by the surgeon, but the latter is not so easily dismissed. There are great possibilities in the selecting of the proper food for man. The Japanese nation expect to increase their stature an inch or two by a more liberal diet.

Criminologists tell us that different kinds of food have a surprising effect on the morally delinquent, and they intimate that with a carefully selected diet they can reform the world. Bishop Fellows says virtue can be fed into a growing child, and by the same reasoning vice can be fed into children through their stomach. Who knows but that the yellow streak which we detect in our friends sometimes has been caused by eating cold mince pie and pickles in childhood?

Dr. Metchnikoff says that with a proper diet and an agent that would inhibit the multiplication of the flora of the large intestine the average life of man ought to be 120 years. These are not fanciful possibilities either. Scanty and improper food stunts the growth of any animal or man. There is a great difference between the moral bias of the cannibal and his missionary victim. The tissue changes in many diseases and old age are the same as those caused by known poisons like lead, mercury, alcohol and syphilis.

It has not been proven that any drug has the slightest effect in restoring to normal the pathological lesions of a sclerosed liver or kidney or blood vessel; relief in these cases must be looked for almost wholly from selected diet and suitable climatic conditions. If this care of diet is necessary after the disease has begun, how much more important it would have been before the sclerosis commenced.

I believe that man ought to have his diet list revised. The butcher and baker and cold storage man have been furnishing us food for their own personal gains too long. Now the physiological chemist and the physician must tell us what to eat. We need pure and clean and digestible food, and what was suitable for man as an animal is not suitable for him now. He has developed mentally until he is almost overwhelmed by the inventions of his own brain. Steam and electricity, railroads, telegraphs, telephones, telescopes, microscopes have made man's life more complex and artificial and multiplied many-fold the impressions on his sensorium.

Consider the number of different things a man sees and hears and does and thinks about in a day. This facility of adaptation to the intricacies of life has been gained by long years of strenuous effort. This effort must continue until man attains that mental and moral development for which he was created. And it will be the province and privilege of the members of the medical profession to discover how to so nourish the body as to keep from atrophy and decay those higher and specific cells on which our development depends. From them we look for the answer to our questions: What shall we eat? and what shall we drink? and how shall we be saved from disease and premature old age? They have answered harder questions before and have saved the race from pestilence and plague so mysterious and deadly as once to have been thought the manifestation of Divine wrath, and they will find an answer to these.

THE IMPORTANCE OF INTRACELLULAR ENZYMES
IN PHYSIOLOGY AND PATHOLOGY.

*Read before the Medical Society of the County of Albany, N. Y.,
December 13, 1906.*

By HOLMES C. JACKSON, PH. D.,

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No single chapter in biological chemistry has contributed a greater and more lasting impetus to the gradual downfall of the vitalistic theory of life than that of the enzymes or unorganized ferments.

No clearer picture could be obtained of the origin and development of the change in scientific opinion which has occurred during the last half century regarding the causation of life, than by a study of the discovery and gradual evolution of the character of the enzymes which apparently possess vital power and functions. At the present time the possibilities lying latent in this field of scientific endeavor offer greater inducements than almost any other branch of chemical physiology. The solution of the origin and cause of life takes second place to no other topic in human interest.

In view of the extreme importance which thus becomes attached to the enzymes and in order that we may obtain a clear and concise conception of their character, properties and mode of action it is fitting that, at the outset, there be outlined a short historic account of their discovery and development.

The term fermentation primarily served to designate those seemingly obscure reactions in which a gas or gases were produced as a result of chemical action. Even the liberation by an acid of CO_2 from a carbonate came under this classification. Gradually, however, the word came to be restricted to that transformation by which sugars became converted into alcohol and CO_2 . Berzelius was one of the first to suggest that the action of yeast cells in this reaction was of a catalytic nature; that the organisms acted by contact, but did not take part in the reaction. Coincident with the further discoveries of reactions which seemed closely related to sugar fermentation namely, lactic acid fermentation, putrefaction, digestion, etc., all became identified under the same classification. As a result of Pasteur's

epoch-making researches the general processes of fermentation seemed to allow of a subdivision under two heads; first, those in which the presence of some cell or organism was necessary as in the fermentation induced by organized bodies such as yeasts, bacteria, etc.; and second, those in which the reaction occurred in the entire absence of cell life, the so-called unorganized fermentation, set up by the unorganized ferments or enzymes such as pepsin, diastase, etc. This apparently satisfactory and stable nomenclature became rudely shaken when Büchner showed that the presence of the yeast organism was not a necessary condition for the fermentation of sugar; but that by subjecting the cells to high pressure, a juice could be expressed which although absolutely cell-free contained the factor that caused the reaction to occur. Thus yeast fermentation was shown to be caused by the presence of an unorganized ferment or enzyme, zymase, acting in the cells of the organism. This gave to us our first clear conception of an intracellular enzyme—an enzyme functioning ordinarily intracellularly, but capable of activity without the presence of the cell. Büchner's observations apparently indicated that no real difference exists between the organized and unorganized ferments, but that enzymes are to be held responsible for the activity in both cases. With the organized ferments, the enzymotic processes occur intracellularly while the unorganized ferments or enzymes become the products of the secretion of the cell but functionate extracellularly.

To Salkowski must be given the credit for the discovery that organs or tissues aseptically removed from the body and kept under aseptic conditions slowly underwent chemical disintegration of a character which closely resembled those decomposition processes which resulted when proteids were exposed to the action of digestive enzymes either inside or outside of the body.

Previously the fundamental and pre-eminent property of *living* matter had been considered to be decomposition or disintegration. It is by this means that energy is liberated to supply the various needs of the body such as movement of the muscles, maintenance of heat, secretion by cells, etc., but it was supposed that this disintegration of protoplasm rested primarily in the life of the cell, and that through this process the cell maintained the integrity of its existence. Previously to Salkowski, Hauser had noticed that surviving organs preserved under aseptic conditions underwent a general softening and destruction

of the most typical structural part of the cell, the nucleus. All of these facts pointed to the presence in the cell of some process which, after its death, shows itself as a disintegration of the nucleus and protoplasm. There remained but a step then to connect the physiological breaking down of protoplasm during the life of the cell with that occurring after its death and to explain them both by a common cause.

To this post mortem self-disintegration or digestion of tissue Hofmeister gave the name of *autolysis*. The character of this autolytic change resembles to a great degree peptic or tryptic digestion, since the chemical products of the autolytic decomposition of surviving organs are practically the same as those of gastric or intestinal digestion. The objection, however, was raised against the assumption of this post mortem process as a specific function of the cell, that the decomposition might be due to the presence in the organs or tissues after death of trypsin or pepsin carried to them from the pancreas or stomach by the blood. We cannot discuss the many facts which tend to disprove these objections. The weight of evidence certainly bears on the side of the view that the autolytic activity is a property of the living, or perhaps more precisely, surviving cell.

The analogy with the yeast is also here apparent; for not only does autolysis occur in surviving organs with the cells intact, but also when every vestige of cell identity is lost. In fact, watery extracts of the organs from which the cells have been removed by filtration, exhibit the same characteristic reaction. Here again we have to do with an intracellular enzyme, whose normal activity occurs inside of the cell but is not dependent upon its integrity. Unfortunately we have not time to discuss the interesting problem concerning the question as to whether the chemical processes originated by these intracellular autolytic enzymes are absolutely identical with those intimately associated with the life of the cell. Our subsequent discussion will throw considerable illumination upon the problem, however.

Perhaps at this point it would be well if an attempt was made to obtain as clear a conception, as our present knowledge allows, of what an enzyme really is and how and in what manner it causes certain chemical reactions to occur. Enzymes are defined as catalytic substances which accelerate slowly proceeding reactions. This class of compounds is not only associated with living or organic matter, but there exist many examples of inorganic

substances which have been termed *inorganic* enzymes, since they cause to take place reactions which are identical with those set up by certain organic compounds of this type. The best known example of these inorganic enzymes, and perhaps therefore the simplest for the purposes of explanation, consists in the use of platinum in a state of microscopic subdivision in that form of Welsbach burner which has recently made its appearance on the market under the name of *Ignito*. The mantle of this burner has set into one side a piece of finely divided platinum which possesses the power of activating the oxygen of the air so that it becomes capable of combining at room temperature with the carbon-containing compounds of the gas. Combustion is thus effected and heat and light are the result. The platinum therefore performs the same function as the heat of the lighted match. The carbon-gases of the illuminating gas combine so slowly with the oxygen of the air at ordinary temperature that little or no rise in temperature is produced; heat forms one of the factors which causes the combination or combustion of the gases to be sufficiently accelerated so that heat and light may result. The heat of the burning match is an enzyme in the sense of the definition that it accelerates the slowly proceeding reaction between the oxygen and the gas; and as the action of the finely divided platinum possesses the same character, platinum in this condition has been termed an inorganic enzyme. The same is true for platinum solutions in which the metal exists in the colloidal state. It must therefore be emphasized that enzymes do not *originate* reactions; they simply cause the reaction velocity to become accelerated.

The second point to be considered with regard to the action of enzymes is that they act by contact, i. e., they do not take part or are not used up in the reactions. Such substances are called catalysators; the reactions are termed catalytic. Sulphuric acid is now made commercially by the contact method. SO_2 gas combines but very slowly with oxygen at ordinary temperatures, but when a mixture of SO_2 and oxygen is passed over finely divided platinum, combination takes place; SO_3 is produced which in the presence of water forms H_2SO_4 . In this reaction the platinum functions as a typical enzyme; it acts catalytically, i. e., by contact, and is not used up but accelerates a slowly proceeding reaction.

In the light of the above let us now consider the action of a

typical organic enzyme, pepsin. We know that the compound is ineffective as a digestive agent in the absence of the HCl of the stomach; in the presence, however, of 0.2-0.4 per cent HCl, it is considered as acting on proteid matter, decomposing it into simpler bodies—the proteoses and peptones. It is also known that when heated with 5 per cent HCl the proteids undergo decomposition with the formation of similar proteoses and peptones. The analogy must be clear.

In the presence of the catalysator pepsin, the weak 0.2-0.4 per cent HCl is enabled to perform the same changes which without the enzyme require a much greater strength of acid and considerably higher temperatures. The pepsin markedly accelerates the slow reaction of the weak acid of the gastric juice upon the proteids of the food stuffs.

Heat and strong acids transform starch into dextrose and sugar. This same decomposition is effected by the enzyme ptyalin of the saliva in the presence of weak acids. In both of these reactions cited, the decomposition effected is termed a hydrolytic cleavage or decomposition, since in the splitting of the huge molecule of proteid or starch, water is first added on to the molecule in the reaction and subsequently the molecule is broken down into smaller parts. Most of the enzymes in the body accelerate hydrolytic cleavage. The food which we eat would remain absolutely valueless as nutriment were it not that in the process of digestion it suffered a hydrolytic cleavage by the enzymes of the gastro-intestinal tract, in the manner just described.

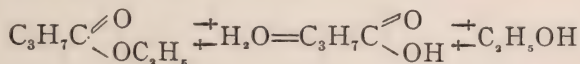
Let us then have firmly fixed in our minds that the action of enzymes is catalytic in that they functionate by contact and that they rapidly accelerate reactions which are already proceeding slowly; they do not originate transformations, they merely hasten them.

As regards the character of the organic enzymes, we may be safe in asserting that they belong to the class of compounds called proteids, since all attempts to isolate them in pure form have resulted in the obtaining of a product which gives proteid reactions. Some observers, however, still consider that the proteid is but an impurity in the product. On the other hand, it is contended that the enzyme simply represents some peculiar type of energy resident in the structure of the proteid molecule, such

as the power possessed by certain sugars of rotating the plane of polarized light.

Various factors influence the activity of the different enzymes. Perhaps the most important condition is the temperature; all evidence their maximum power between 35-40° C. or at about body temperature. Below this their activity decreases quickly, until at 0° C. there occurs a practical inhibition. At high temperatures, and indeed at about the same degree at which proteids undergo coagulation, the enzymes suffer complete destruction. Strong acids and alkalies exert a similar effect. While the life activity of micro-organisms (the organized ferments) is considerably inhibited and, in many cases, the organism is killed by the presence of many poisons, the enzymes are relatively not so sensitive to these reagents. Thus agents employed for asepsis, such as alcohol, ether, salicylic acid, thymol, chloroform, toluol NaFl, bichloride of mercury, etc., allow enzymotic action to proceed without hindrance; a fact which is of the greatest importance in studying their action, especially in post-mortem aseptic autolysis.

Again, certain enzymes exhibit one property which stands entirely unique and intensely significant for the animal body. They possess the power of reversing the reactions upon which they act catalytically. For the sake of explanation let us specify the fat-splitting or lipolytic enzyme, lipase, and consider its action upon the fats of the body. This substance hastens the saponification of fats; if we take, for example, a simple fat-ethyl butyrate and allow lipase to act upon it under certain conditions, hydrolytic cleavage occurs with the production of ethyl alcohol and butyric acid.



This reaction, however, does not become complete, i. e., all of the ethyl butyrate does not become transformed into the two products mentioned. Under only one condition does the ethyl butyrate suffer complete decomposition into its components, namely, by the removal of one or both of the compounds formed as a result of the reaction. If this does not take place, at the end of the reaction all three substances in the equation, ethyl butyrate, ethyl alcohol and butyric acid may be found in certain definite proportions in the mixture. Such a reaction is of course greatly

different from the change which occurs when, for example, silver nitrate acts upon sodium chloride. In the presence of equivalent weights of these two substances, the original compounds disappear completely and two new substances take their place. This reaction runs to a completion. What then is the explanation of the difference between this reaction and that of the hydrolysis of fats by lipase?

We find that if the two products of the hydrolytic cleavage of the fat, ethyl alcohol and butyric acid, are placed together in the presence of lipase they become synthesized into the original compound ethyl butyrate—but this reversed reaction is also, however, never complete, for in the final mixture are found all three substances taking part in the reaction. Lipase consequently possesses the power of decomposing fats as well as synthesizing them from their decomposition products. Its action is reversible and this offers the reason why neither reaction becomes complete. The course of such a reaction is the result of the neutralization of the two reaction velocities. The synthetical processes are striving to neutralize the processes leading towards decomposition. The reaction completes itself midway between the two extremes.

Such a reaction is of inestimable value in the nutrition of the cell. Lipase has been found in varying amounts in *all* tissues of the body; greater and predominating quantities occur where fat cleavage or synthesis occurs, such as in the cells of the active mammary glands, lymph and intestinal mucosa. By its power of reversibility it possesses the function of sustaining a chemical state of fat-equilibrium in the cell. Its analytical power prohibits the formation of too much fat; its synthetic activity does not allow of too pronounced decomposition. Given a cell under the influence of certain fixed conditions, a state of equilibrium is established for the fats by means of this reversible reaction.

Let us now consider, in view of this, how pathological changes in the fat content of a cell can arise. If from whatever cause the products of the cleavage of fats are removed from the cell, the compounds which allow the synthetic processes to occur are lacking; the analytic reaction consequently goes to completion; the fat suffers complete hydrolysis and the cell will become fat-free. On the other hand, if the products of fat decomposition tend to become heaped up in a given cell, the chemical and enzymotic equilibrium becomes upset, and in order to regain this,

but upon a higher level, the synthetic reaction must gain the ascendancy. Hence more fat makes its appearance in the cell as a result.

The importance of this lies in connection with the question as to the cause of fatty changes which are known to occur in various organs of the body, especially the liver. The discussion is always acute as to whether the appearance of an increased amount of fat in the tissue as occurs in fatty livers is due to a new formation of fat by the degeneration of protoplasm or to a simple fatty infiltration from the blood. This rough survey of the power of lipase and the influence which outside conditions exert upon it, throws considerable light upon the possibilities of explanation. The appearance of fat in excessive amounts in the cell may not be the result of a fatty degeneration nor of infiltration, but merely of a disturbed lipogenic equilibrium of the cell in this case, stimulating the synthesis of fat.

We cannot omit to turn brief attention to the similarity in character and mode of action which exists between the enzymes and the toxins in the general sense. In the first place, both belong to the same class of compounds—the proteids—and show like chemical reactions, i. e., great sensitiveness to chemical agents, precipitation reactions, etc. Again, both act in excessively small amounts. Just as toxins are divided into two classes according as they do or do not require an activating compound, the amboceptor, so the enzymes may be grouped into two divisions, those which unite directly with the compound to be acted upon in a manner similar to the combination of a toxin with an antitoxin and those which require an ativator or kinase such as the enterokinase of the intestine which activates the trypsin of the pancreatic juice. Again, immunity against certain enzymes has been established. Morgenroth, by the injection of rennin into animals, has succeeded in obtaining an antirennin serum which markedly inhibits the activity of rennin in vitro. The answer to the question as to the reason why the digesting organs do not digest themselves in vivo is to be found in the proof of the presence of antienzymes in the secreting cells. Thus Weintraud isolated from the stomach mucosa a definite proteid-like substance which, when added to artificial pepsin-HCl digestion completely inhibited the action of the enzyme upon proteids.

The analogy cannot be carried too far, however, since differences do exist which render it impossible to believe that the two

classes of substances, the enzymes and toxins, are absolutely similar in character and mode of action. The toxins, for example, do not exhibit catalytic properties, but are used up and disappear in the reaction which they originate. Schmiedeberg, however, has suggested the name zymotoxins to replace the old term enzyme.

When we stop to consider the importance in physiology of these enzymes, especially those of the intracellular type, we are led to the conclusion that numerous processes, which were previously believed to be intimately connected with the life activity of the cell and inseparably joined with its morphological and functional integrity, are nothing other than enzymotic reactions which may continue after the death of the cell or after the breaking up of its integral units.

Let us now consider briefly from the physiological standpoint some of the most important chemical reactions in the body in which the intracellular enzymes play a conspicuous part.

Oxidation, as it is carried out in the laboratory, requires considerable heat. The proteids of the food are extraordinarily difficult to combust by means of oxygen. The early physiologists were confronted by the seemingly anomalous fact that the animal cell appeared to be in the position to oxidize its food for the production of its life energy at a temperature which was absolutely impossible outside of the body; while, on the other hand, compounds easily oxidizable in the laboratory pass through the organism unchanged. In explanation of this, Schmiedeberg and his school have adduced proof that oxidation in the tissues is accomplished by means of enzymes, the so-called oxydases which activate the oxygen in a manner similar to finely divided platinum. Again, other enzymes, the catalases, possess the power of liberating from H_2O_2 molecular oxygen in a form which, in the presence of the oxidases, is adaptable for combustion at body temperature. The mechanism by which the oxygen of haemoglobin becomes available and is employed in the cell may be roughly outlined as follows: The oxygen of the air enters into combination with the haemoglobin of the blood in the form of a peroxide. In tissues where there exists a need for oxygen, the catalase of the red blood cell causes the haemoglobin to become decomposed, thereby liberating molecular oxygen, which, in the presence of the oxidases of the tissues, combines with the difficultly oxidizable compounds in the cells and decomposes them;

as a result of which heat and energy are generated. The action of certain poisons, such as hydrocyanic acid, is thus explainable by its well-known inhibitory action on catalysis, thereby diminishing the catalytic action of the catalases and oxidases, and causing oxygen starvation.

The transformation of glycogen into sugar in the liver and other organs is accelerated by a glycogenic enzyme. The hydrolytic decomposition in the cell of proteids, carbohydrates and fats is respectively cared for by proteolytic, glycolytic or amylolytic and lipolytic enzymes. The formation of urea in the liver is dependent upon the presence of a synthetic enzyme; in fact, we may cover the ground completely by concluding that almost every chemical reaction in the body which takes its part as an integral factor in the complex chemical rearrangements and exchanges that we associate with life, is governed and controlled by its specific enzyme. We must consider the cell as the seat of numerous interreacting chemical changes, each influencing the other to a certain extent and each by itself controlled by some specific enzyme which itself is regulated by the chemical conditions existing in the cell. Under normal physiological conditions, the conflicting forces exist in a state of chemical equilibrium, brought about by an equalization of enzymotic forces, all of which is of such a character that the life of the cell is sustained and its functions performed.

Perhaps in no better way can we arrive at a concise conception of the above statements and of the relation of intracellular enzymes to life processes than by a brief consideration of the development of the cell from this standpoint. In the simple ovum there exists a type of undifferentiated cell whose chief function is reproduction and proliferation. According to the researches of Loeb, two chemical forces or reactions are striving for the mastery in the unfertilized ovum; the one synthetic in nature, leading the cell to maturity and subsequent growth; the other autolytic or lethal, opposing the other and tending to produce cellular death. In the unfertilized condition the mortal processes gain the ascendancy, the power of the autolytic enzymes overcomes that of the synthetic and death supervenes. The function of fertilization serves to so disturb this death producing equilibrium of the maturing ovum that the synthetic processes are allowed to overbalance the analytic and thus proliferation ensues. All attempts, however, to show that this altered enzymotic equi-

librium is occasioned by the spermatozoa introducing enzymes into the unfertilized egg have remained fruitless. The function of the spermatozoa must consist in the introduction of certain compounds (salts, as Loeb is trying to prove) into the cell, and thus altering the chemical equilibrium, osmotically perhaps, in such a manner that one enzymotic process puts the others in abeyance. Our discussion of lipase has shown how this is possible. This conception of intracellular conditions must remain the fundamental physiological one, since by it we learn to explain pathological variation. Let us continue with the developing cell. As proliferation proceeds, morphological differentiation begins to make its appearance. At this point, the resting, growing condition of the cell takes on new functions. The appearance of those characters which are associated with specific chemical functions of the various cells of the body consist then in the development in them of specific and characteristic enzymes which accelerate the reactions specific for that type of organ or tissue. The primary life history of a cell of the pancreas does not differ chemically from one of the liver. The pancreatic cell has evolved the secondary function of secreting amongst other compounds enzymes which act upon food stuffs in the intestine, while the hepatic cell secretes the constituents of the bile and at the same time performs almost numberless intracellular reactions. These we must necessarily consider as secondary to the primary function of life. So, then, the diversified chemical processes which run parallel to the structural differentiation become in the same sense secondary to the changes which are intimately connected with the life of the cell. Slowly, as development proceeds, the proliferatory character of the cell diminishes. The synthetic processes which remain are only sufficient in intensity to protect the protoplasm from the ravages of the need for the supply of energy. In the place of synthetic changes, autolytic, oxidative and reductive processes of secondary nature appear which serve to differentiate the various types of cell.

Having roughly sketched the importance of the intracellular enzymes in physiological processes and the conditions which may effect their activity, let us turn to the consideration of what is known concerning the enzymes in pathological conditions.

Metschnikoff was the first to call attention to the close relation which exists between the action of the phagocytes and intracellular digestion of food by unicellular organisms, such as

amœba. The bodies of the latter have been shown to contain proteolytic enzymes which act intracellularly, and which digest the ingested material in the vacuoles of their bodies. The leucocytes are also known to possess the power of transforming coagulable into noncoagulable nitrogen by intracellular digestion. The inflammatory exudates contain polymorphonuclear and mononuclear leucocytes, which latter are termed macrophages. During the later stages of inflammatory processes these macrophages are actively engaged in ingesting and destroying red cells, polymorphonuclears and other cellular elements. In some cases the polymorphonuclears are seen to eliminate granular material which seems to be of service in resolution of the exudate. The mononuclears of the spleen and lymph glands during typhoid are similar in character and function. The function of the polymorphonuclears is to attack and remove all kinds of bacteria, while the macrophages disintegrate cellular elements and parasites belonging to the animal kingdom. The resolution which occurs in acute lobar pneumonia, forms a striking example of the above changes. In the stage of red hepatization, the portion of lung involved becomes solid and friable, resembling somewhat the liver, as a result of the accumulation in the air spaces of red cells, polymorphonuclear leucocytes and fibrin. When gray hepatization or resolution sets in there occurs a great increase in the number of leucocytes, some undergo disintegration, thereby liberating their intracellular enzymes, and there takes place a gradual softening of the exudate by autolysis. The insoluble coagulable proteid of the exudate becomes digested into soluble compounds, which pass away in the circulation until the exudate entirely disappears.

Flexner, from experimental evidence, concluded that the most active autolysis occurred at the time of the resolution of the exudate. Opie has shown that the various kinds of leucocytes in the bone marrow and pus from purulent abscesses contain proteolytic enzymes, whose activities are influenced by various conditions. Apparently the polynuclears contain a proteolytic enzyme, whose maximum activity occurs in an alkaline medium, while the enzyme from the mononuclears is most potent in alkaline solution.

The larger the percentage of mononuclears in an exudate, the more active the proteolysis. The mononuclears appearing in the lymphatic glands also show the same proteolytic enzyme,

which he called lymphoprotease. Ordinarily, antienzymes residing in the albumins of the blood inhibit the action of the intracellular leucocytic enzymes. The destruction of tissue as within an abscess occurs when, with the formation of pus, there results a loss of antienzymotic power. Then fibrin and necrotic areas undergo solution. That a loss of antienzymotic power does occur at times has been demonstrated in the later stages of sterile inflammation. Meyer proved that lymphocytes on the other hand do not seem to possess intracellular enzymes, since they never cause tissue to become fluid. The difference in enzymotic action of the white cells is quite clearly indicated from the fact that in splenomyelogenous leucaemia the blood, on account of the increase in the number of leucocytes present, undergoes autolysis much more rapidly than in lymphatic leucaemia. In fact, in freshly drawn leucaemic blood of the myelogenous type, proteoses and peptones are found in amounts far in excess of the normal. Conditions of this character do not exist in lymphatic leucaemia. It is not at all improbable that variations in the opsonic power of the blood under various conditions are simply indications of the variability of the amounts of antienzymes present and tending to inhibit the activity of the enzymes contained in the leucocytes, especially the mononuclears. The function of the opsonins is to render the bacteria more attractive to the leucocytes; since we have seen above that the mononuclears destroy bacteria in virtue of their possessing proteolytic enzymes and that normally antienzymes, to a certain extent, inhibit their maximum activity, any condition which might tend to diminish the strength or amount of the antagonistic antienzymes would allow the leucocytic enzymes to become more potent and effective. This would, in effect, render the bacteria more liable to attack by the mononuclears.

As stated above during pus formation, the antienzymotic power diminishes, at this time an increased opsonic index also occurs.

The leucocytes also contain enzymes—the oxidases which liberate oxygen. They differ from the catalases in the serum or red cells in that they oxidize compounds without the aid of hydrogen peroxide.

Meyer differentiated the white cells according to their content of oxidases, in that these substances seem to possess some relation to the neutrophile granules present in some types of cell. While the polymorphonuclears and their antecedents, the mono-

nuclears and myelocytes, richly contain enzymes of this character, the lymphocytes apparently are lacking in this regard. This fact furnishes another means of differentiation between the blood of myelogenous and lymphatic leucaemia. The presence of the oxidases in the myelocytes causes the blood of the myelogenous type of the disease to react sharply to the guaiac reaction. The reaction does not occur with blood of lymphatic leucaemias.

Serous exudates undergo autolysis, resulting in a decrease in coagulable nitrogen. The aseptic removal of thrombi is undoubtedly brought about by the action of proteolytic enzymes secreted by the leucocytes or set free by their decomposition. The whole mass becomes softened and finally passes into solution.

We may then conclude that the leucocytes functionate as carriers of enzymes, whose purpose is to aid in oxidation or the removal of material which from some cause or other has become detrimental and valueless for the life of the organism. At times the removal occurs by ingestion and intracellular digestion; at others by the disintegration of the cells whereby the enzymes are liberated. Normally these processes are held in check by antienzymes.

If we turn to the undiscovered territory of diabetes, we find that also in this field the help of enzymes has been elicited in order to explain the causation of the disease. Lepine's theory, based upon many investigations, that the amount of the glycolytic ferment in the blood was diminished both after extirpation of the pancreas in animals and in spontaneous diabetes in man, has finally been laid aside as untenable. In its place, but not greatly differing from it, has arisen Cohnheim's observation that neither the pancreatic juice alone, nor muscle juice itself, produces any considerable glycolysis, but when the two juices are allowed to act together on sugar a most energetic destruction ensues. This seems to prove that in accordance with the theory of v. Mering and Minkowski, the pancreatic cells secrete (internally) some substance, be it enzyme, antienzyme or kinase, which when carried by the blood to the tissues, principally the liver, enables the cells to decompose and thus utilize the sugar. Cohnheim gave the name of activator of the pancreas to the substance. Its potency must lie in the direction of rendering active in the cells of the body some glycolytic enzyme, in a manner similar to that in which enterokinase activates trypsin.

In introducing these two views, it has simply been my purpose

to indicate the direction in which future work along the lines of solution of the question of diabetes must develop. Diabetes is most assuredly the result of a general disturbed enzymotic equilibrium of glycolytic balance in the organism, whereby the enzymes potent in the transformation of sugar are held in abeyance. The possibilities by which this might occur are so numerous that the problem becomes intensely difficult. Von Noorden believes that the causes lie in a deficient transformation of the sugar into glycogen in the liver. The work of some observers seems to point in this direction. Thus Jacoby has shown that the diabetic liver does not possess the normal glycolytic power; while Hirsch and others adduce proof that the pancreas produces a substance which markedly increases the capability of the liver to transform sugar. The manner of action of this substance is still unknown. Whether it is a proenzyme which is carried by the circulation to the liver and is there transformed into the active enzyme, whether it is in the nature of a kinase which activates an enzyme already present in the hepatic cells, or, lastly, whether in diabetes there occurs an overproduction of an antienzyme which inhibits the activity of normal glycolysis still remains undecided.

A typical picture of increased intravital autolysis occurs in the processes of the liver in phosphorus poisoning and acute yellow atrophy. Salkowski was the first to point out the probable relationship between the appearance of leucin and tyrosin in the urine of patients suffering with yellow atrophy of the liver and the presence of these compounds as the products of autolysis of this organ outside of the body. In the normal liver, at most, traces of these substances can be isolated. From the livers of animals poisoned with phosphorus or from yellow atrophic organs, a different chemical picture is obtained. The whole organ has become softened. Leucin, tyrosin and other products found in autolysis *in vitro* are present in relatively larger quantities. These easily soluble substances formed in the liver pass readily into the blood stream and thence into the urine. In this way an explanation is readily given for the appearance of leucin, tyrosin, proteoses, lactic acid and an increased elimination of purin bases in the urine secreted during the above conditions. The circumstance that in phosphorus poisoning the coagulability of the blood is almost entirely lacking, necessarily ascribable to a lack of fibrinogen, is explained by the fact that the globulins

of the blood, which include fibrinogen, more readily suffer autolysis than the albumins.

The increased autolytic processes noticed in the liver cannot be attributed to the direct action of phosphorus, since this element does not act in this manner. We have grounds for assuming that the power of this so-called protoplasmic poison consists in destroying or weakening the action of the antienzymes, which normally inhibits autolysis.

Certain attempts have been made to determine the character of the chemical processes which occasion the formation of neoplasms. Analyses of the new growths have been made and compared with those of the normal tissue. In general, the results seem to indicate the presence of autolytic decomposition products in the malignant growths in quantities which are in excess of the normal; there does not appear to be qualitative difference of sufficient importance for explanatory purposes. The quantitative dissimilarity may be ascribed to an impaired circulation in the growth which does not allow of a removal of the soluble products. The same series of products appears in the autolysis of a carcinoma of the mammary gland as occurs in the autolysis of the normal tissue. On the other hand the evidence seems to lean to the view that in the new growth the equilibrium of enzymes is upon a level of greater autolysis than is normally the case. Embryonic tissue is normally poor in autolytic enzymes, as was mentioned when the discussion of the developing cell occurred. This fact has been adduced against the view that tumor cells possess an embryonic character. As regards their enzymotic equilibrium they certainly do not. Apparently the neoplasms, to a certain chemical extent at least, take on the characters of the tissue from which they originated, since Lubarsch has pointed out that even if the adrenals are entirely destroyed by primary carcinoma, Addison's disease may manifest itself.

All attempts to produce neoplasms by injecting extracts into normal animals have resulted negatively. Apparently the disturbance of cellular equilibrium is not to be brought about in this fashion.

On account of historic and theoretical importance only, mention need merely be made of the curious attempts which have been instituted to effect cures of carcinoma by the injection of trypsin or other allied enzymes into the new growth. Beard, reasoning from the embryological character of the neoplasm and

the presence in such tissue of predominating synthetic processes (enzymes), has endeavored to render negative such a condition by the introduction of an analytic antienzyme in the form of trypsin; papain has likewise been employed. It is decidedly questionable whether the beneficial results which are so often reported as a result of such treatment are in the relation of cause and effect in connection with the enzyme. As has been lately pointed out by Shaw-Mackenzie, trypsin, as such, does not occur in the pancreas nor in the pancreatic juice. Its proferment, which is secreted by the pancreas, is practically inactive as a proteolytic enzyme and requires activation by the kinase, enterokinase, before it can digest proteids. This fact must be borne in mind while we are considering the value of pancreatic extracts, etc., in this connection. Scientifically there does not seem to be any reasonable basis for the treatment.

Finally, attention must be called to the appearance in the juices of certain plants of Southern Asia of a substance which, upon standing in the air, turns the fluid to a deep black, the lac employed by the Chinese and Japanese to cover wood, etc., as a varnish. This change is due to the presence of an oxidizing enzyme, laccase. In other plants, i. e., dahlias, beet root, mushrooms, etc., there occurs besides the laccase an enzyme characterized by its specific action upon tyrosin, the so-called tyrosinase. The darkening of the sap of many plants upon exposure to the air is occasioned by the oxidation by this enzyme of the tyrosin into homogentisic acid. The same enzyme has been isolated from the blood or haemolymph of certain insects—the lepidoptera. v. Furth has shown that this enzyme possesses the power of rapidly darkening solutions of pyrocatechin, hydrochinon, or tyrosin. In the case of the latter substance there settles out of the mixture a black precipitate which, upon analysis, was shown to belong to the class of substances called the melanins.

It has long been known that the physiological production of melanin-like compounds occurs in the case of certain cephalopods, like the cuttlefish, which secrete from certain gland-like cells a dark fluid (the commercial sepia) into their ink sacs.

Przibram made an extract of the mucous lining of this sac and allowed it to act upon a solution of tyrosin. In a short time the solution turned black and a melanin-like precipitation occurred. The production of the black pigment, sepia, therefore

depends upon the physiological action upon tyrosin of a tyrosinase (enzyme) in the cells of these lower animals. All this is suggestive of the possibility that in man the melanin-like pigments owe their formation to enzymotic processes of a similar nature. Perhaps the sudden appearance of the malignant melanotic tumors is caused by the releasing from inactivity of a tyrosinase normally present but inactive in the cell.

ECTOPIC GESTATION.

REPORT OF TWO RECENT CASES.

Read before the Medical Society of the County of Saratoga, September 28, 1906.

By G. SCOTT TOWNE, M. D.,

Saratoga Springs, N. Y.

Until as recently as 1883, the condition known as ectopic gestation, or, by its synonyms, extra-uterine pregnancy, conceptio vitiosa, etc., was of interest, chiefly from its pathological standpoint, and very few or even no cases were recognized clinically. But from that date, at which time Lawson Tait operated on his first case of ruptured tubal pregnancy, the clinical interest in the affection has markedly increased, as is shown by the decided increase in the literature on the subject, and the apparent increase in the frequency of the condition. The increase in frequency, however, is much more apparent than real, for it is no doubt due to the more modern methods of diagnosis and a wider knowledge of the subject among the physicians of the present day.

Ectopic gestation is mentioned first in the writings of an Arabian physician, Albucasis, as far back as the eleventh century. In this case, fetal bones were withdrawn through a suppurating sinus at the umbilicus. Other cases were published during the fifteenth and sixteenth centuries. Primrose records a case in which ectopic gestation was diagnosed in the left side of a patient's abdomen in 1591. This was followed by signs of a similar condition on the right side in 1594. The right-sided fetus was discharged in 1595 piecemeal through a suppurating sinus, whilst the one on the left side was removed by an operation, the patient being restored to health.

The first time that a tube is mentioned as containing a fetus is in 1604. It is mentioned again in 1638, in which year Riolo records cases. The early history of this condition is not confined to women, inasmuch as the disaster was proved as long ago as 1597 to occur in the cow and later instances are recorded in the case of sheep, bitches, whores, and so forth.

Ectopic gestation, as a subject, has been divided into varieties, the number of which has varied much from time to time. Until 1824, there were three varieties—tubal, ovarian and abnormal. Then, in 1837, a French writer, Dezeimerie, divided the condition into ten divisions. The latest classification is that of Lawson Tait, in which he puts the subject under the three headings, (1) ovarian, (2) tubal, and (3) tubo-uterine. Much doubt was long entertained regarding the ovarian type of pregnancy, and not until 1899, when Dr. Catherine Van Tussenbroeck, of Amsterdam, and again in 1901, Auning and Littlewood, showed specimens at the Obstetrical Society of London, was the question of ovarian pregnancy settled once and for all. It must be acknowledged, however, that this type is most unusual and with great difficulty accounted for. It seems almost incredible that the male cell has the power of penetrating the coats of the ovary and enter an unruptured follicle.

The second variety is the tubal gestation, by which is meant pregnancy occurring anywhere within the free portion of the Fallopian tube. This class comprises nearly every case of ectopic gestation and is, therefore, the most important. Authorities now divide tubal pregnancy into three varieties, the ampullar, isthmic and interstitial. The interstitial is regarded as the rarest form by all writers; the ampullar is the next rarest type, while the isthmic occurs most often.

Lawson Tait, as a result of his observations, announced that rupture occurring not later than the twelfth week was the universal termination of tubal pregnancy. More recent writers, such as Williams and Werth, however, have shown that only one-fourth of the cases end in this way, the other three-fourths terminating by abortion at an early period. Very exceptional instances are on record in which the fetus has been known to go on to full term.

The third variety in Tait's classification comprises a rare pathological disaster. This is the condition known as tubo-uterine gestation or interstitial pregnancy. The sac occupies

that portion of the tube which is embraced by uterine tissue. Very few authentic cases of this condition seem to be on record. According to Lackyer, the sac usually ruptures into the peritoneal cavity sometime between the sixth and twentieth weeks and with uniformly fatal results. But one case is said to have recovered and that was a patient of Laphorn Smith, of Canada. The crisis occurred six weeks after the last period, and one gallon of fluid blood is said to have been removed from the abdominal cavity.

TREATMENT.

Ectopic gestation is strictly a surgical condition, and usually calls for the most prompt and accurate judgment in diagnosis, and always calls for active surgical intervention when once diagnosed. Statistics collected by Schauta, covering a period of twenty years, show the mortality to have been reduced from eighty-six and nine-tenths per cent., in those cases which were not operated upon, to five and seven-tenths per cent., in those cases which received the benefit of a laparotomy. These figures alone emphasize more forcibly than any argument that surgery is absolutely demanded in this condition.

Dr. S. C. Gordon, of Portland, Maine, has aptly said that "the first rule of surgery should be to save life." I believe there is no condition that a surgeon is called upon to meet which so fully demonstrates the wisdom and force of this statement.

With your kind indulgence, I will relate my personal experience with my last two cases of ectopic pregnancy, which came under my care last August, in order to show some points of interest in the clinical history, diagnosis and treatment of this condition.

Mrs. J. E. B., age, 25; married for two years; never pregnant before; housewife by occupation.

Began menstruating at thirteen years. Menses always regular and painless; usually lasting about three days; patient's physical condition good; fairly rugged in appearance, but small of stature.

July 5th, patient menstruated regularly as usual; menses continuing for three days,—then ceased. Began again after an interval of two days and continued for three weeks, during which time she had some morning sickness, enlargement of breasts, with a slight secretion of colostrum, a sense of fullness in lower portion of abdomen; symptoms were all mild, even the menses being only slight, soiling only two napkins daily on an average.

July 26th, about noon, patient was suddenly seized with severe abdominal pain low down in abdomen. This pain came on very suddenly, without any extra exertion or fall, and was very severe and constant. I saw

patient about one and one-half hours after the onset of the pain, and was told by a woman who had been called in that "the patient had cramps; that they had been so severe that she fainted." The patient's condition was fairly comfortable when I arrived, slightly pale, small pulse at the wrist, 120 per minute; temperature slightly sub-normal; abdomen slightly distended and tympanitic; some tenderness over lower abdomen. Vaginal examination showed some fullness in right ovarian region; no mass could be felt; uterus slightly enlarged.

Diagnosis seemed obscure to me and I ordered only palliative measures. Patient improved and was very comfortable, when on July 30th, just four days later, she had a repetition of the same symptoms, only much exaggerated; pulse 140, temperature sub-normal; face anxious and pale; patient very restless; abdomen considerably distended and slightly dull over lower portion; no difference in vaginal condition. Ruptured ectopic gestation suspected. Called in Dr. Resseguie, who agreed with me in the diagnosis.

The patient was taken to hospital, but refused operation. Palliative measures were again resorted to and once more patient became comfortable; pulse and temperature both approached normal, but face was very pale; hemoglobin, forty per cent.; tongue very much coated and breath very foul.

August 3d, was sitting up in bed against orders; attempted to reach something on the table beside the bed and was again seized with similar symptoms, only less severe. Operation again advised and refused.

August 5th, patient consented to an operation, which I did early Monday, A. M., assisted by Dr. Resseguie, Dr. Fish giving the anesthetic.

The abdomen was found filled with liquid blood, the amount estimated by those present to be about three quarts. A large oblong right tube was found and promptly clamped by the sense of touch. The blood was removed hastily; the tube tied off, and the abdomen closed; the operation lasted thirty-three minutes.

The tube had a large rent in the fimbriated extremity representing the placental site, being partially occluded by it. Upon opening the tube, a complete sac was found filled with amniotic fluid and in the center a small four weeks fetus.

The patient made a very uneventful and rapid recovery and returned home twelve days from the operation.

The second case came under my care August 23.

Mrs. E. S. B., age, 26; married; housewife; mother of one child when she was sixteen years old; one miscarriage about four years ago. Began menstruating at fourteen; always regular; menstruation painless and never excessive; general appearance robust; weight about 160.

Menstruated last in the second week in June; consulted me the last week of July to determine whether or not she was pregnant.

She had had some morning sickness; a sense of fullness in the breasts with some secretions present. There were no other symptoms.

The vaginal examination was practically negative, for I was able only in outlining a slightly enlarged uterus through a very thick abdominal

wall. The patient being a very imaginative person, I doubted the symptoms she gave and thought she was pregnant.

August 23, while visiting at a friend's house three miles in the country and carrying one of the children on her back about the yard, she was suddenly seized with excruciating pain in the abdomen. This happened about six P. M. I saw her at 6:45, at which time she was extremely pale; pulse small, thready and 128; respiration much accelerated; temperature subnormal; patient bathed in profuse perspiration and having every appearance of intense suffering and extreme prostration. The abdomen was very much distended and tender.

Aided by the symptoms which she presented in July, and which I was then inclined to regard as bogus, I diagnosed her condition as ruptured ectopic gestation and began prompt preparations to get her to the hospital. We were much hindered on account of the distance and the absence of a telephone and it was half-past eight o'clock before the ambulance arrived at the hospital with the patient. Her condition was then desperate. She had a sighing respiration which seemed an exertion; she was pulseless at the wrist and her pallor was extreme.

Dr. Resseguie saw the patient with me upon her arrival and confirmed my diagnosis. Her condition seemed almost too hopeless to permit operation, but it was absolutely her only chance and was promptly done; pulse over the heart was 152.

Saline transfusion under the breasts was begun as soon as the patient was upon the table and continued throughout the operation. In all 250 cubic centimeters were put under each breast.

The abdomen was opened and an empty dilated tube, at the right horn of the uterus, found and clamped. The amount of liquid blood and clots that escaped through the incision was estimated by the doctors and nurses present as one gallon. The tube had ruptured at its junction with the uterus and the bleeding was from branches of the ovarian artery which had compensated to meet the requirements of the pregnancy. Some difficulty was experienced in suturing the rent in the uterine wall as the tissue was very friable, the placental attachment having taken place at the point of union of the uterus and tube. A large hemocele, extra-peritoneal, had dissected its way through the broad ligament and over a large area of the side of the pelvis. This was emptied partially by exerting pressure upon it and thus forcing the blood back through its point of entrance. A hurried search was made through the abdomen for the fetus, which was not found. I then put about two liters of normal salt in the abdomen and closed the wound; the operation lasted forty minutes.

The patient left the table with a feeble pulse at 110 per minute. Stimulation of strychnine, digitalin, and saline by rectum were promptly begun and the results were very satisfactory.

On account of the lack of time, no attempt at emptying the bowels was made before the operation and we began to have trouble with gas in less than twelve hours, which looked very much as if it would smother our patient by mechanical interference with the lungs. Calomel and soda were begun immediately in large doses, and high stimulating enemas of mag-

nesium sulphate \mathfrak{Z} iii, glycerine \mathfrak{Z} ii, turpentine \mathfrak{Z} i, quinine solution and flax-seed were given frequently, turpentine stupes over entire abdomen and all with only partial results for three days. Finally, during the night of the third and the morning of the fourth day, an immense amount of green corn and a large quantity of undigested food were passed; the temperature dropped from 102 gradually to normal; the pulse from 120 to 130 also came down, and the patient went on to recovery with a perfect wound and left the hospital in twenty days from the operation.

The fetus was not found either in the abdomen or in the clots, and consequently I have only the remnants of the tube upon which to base my judgment regarding the age of the pregnancy. However since it is now a month subsequent to the operation and there are no symptoms to denote any difficulty either of absorption or a foreign body present in the abdomen, I think it is safe to assume that the pregnancy was young and that it is already absorbed.

The first case was rather a simple one of isthmic tubal pregnancy, partially aborted. The second one was a ruptured tubal pregnancy, being almost a tubo-uterine type. Both show the necessity of operative procedure; the one showing that procrastination may not always prove immediately fatal; the other, that only the most prompt and heroic measures alone can save the patient.

Not much can be learned from the clinical history of this condition. I do not believe it possible to diagnose ectopic gestation earlier than the fifth or sixth week without the presence of some disaster to the pregnancy to aid one in its recognition; but, with a clinical picture of collapse, extreme pain in the lower abdomen and evidences of a concealed hemorrhage, it is not so difficult.

It has been truthfully said that "One swallow doesn't make a summer." It can also be as truthfully said that two swallows likewise fail to make it summer. However, while it is not safe to draw conclusions from two cases, I hope these ideas may be suggestive of more to those present which will be brought out in discussion.

Editorial

I went down into the gun-room, for the doctor preferred being there to the cockpit, as there was so much more room to operate, and I gave him the captain's message.

He was very busy taking off a poor fellow's leg. It was a horrible sight, and turned me sick and faint; as soon as the bone had been sawed off, he said:

"You will find all the wounded I have dressed in the steerage—those they have brought me down dead are in the cockpit. There have been five amputations already; the master is badly wounded, and Mr. Williams, the mate, is killed; those whom I have not been able to attend to yet are here in the gun-room. You must ascertain what the captain wishes to know yourself, Mr. Keene—I cannot leave a leg with the arteries not taken up, to count heads. Mr. Rivers, the tenaculum—ease the tourniquet now."

CAPTAIN MARRYAT.

Percival Keene.



This phrase has become current with the increase of contributions of medical origin, and has generally been applied to ventures of physicians into general literature. The surpassing genius with the pen of Oliver Goldsmith and Oliver Wendell Holmes has given to them a literary fame in the shadow of which their medical lives have been eclipsed. But it is difficult for physicians to relinquish the claim upon these delightful writers as colleagues. Among medical authors of the present day Weir Mitchell is *facile princeps*, and of all who have taken this dual place of novelist and physician, he alone has maintained supremacy in either branch of intellectual endeavor, and is known to the world no less as a physician of highest scientific attainments than as an author of rarely erudite works.

The phrase "The Physician in Literature" has another application when used in description of the doctor as seen by his patients, and many medical characters in fiction have become famous. Ian MacLaren's William MacLure appeals most forcibly to our sympathies, and we like to think of him as the type. To clear the ambiguity of the phrase and to meet all its requirements, implied and actual, however, have been left for an

Albanian. In the Christmas *Argus* of this season, under the title "A Hero of the Hills: Chronicle of a Mountain Medical Parish, By Frederic C. Curtis, M. D.," is an excellent piece of literary work of a physician, by a physician and for—everybody. True to life, and free from even the accentuation which is the privilege of the novelist, this biographical sketch brings into delightful harmony the relations of the hard service of a country practitioner with the romance which is too often regarded as solely a figment of the imagination. Before the vision of the reader, acquainted with the personalities of this sketch, arises a vivid picture of the conditions of its inspiration. The city consultant, in his luxurious office in the shadow of the majestic capitol of an empire State, to whom the good things of life come easily, looks beyond the artificial parks and magnificent buildings of his environment and recalls the comradeship of a day in the mountain wilderness. After a life-long acquaintance with the masters of his science, medical authors and investigators, physicians prominent in the local and political world, he selects, for the expression of his ideals, the colleague who battles with disease and death, unaided by specialists, in the remote forest. His hero "certainly did realize a love for his work and a devotion to the calling and associations of his profession. All phases of it in the subjects of his care excited his interest. He seemed to seize with avidity the rare chance of talking about them to one who might be appreciative. It was not simply the abstract disease that was pictured, but the environment of each diseased individual, a little child, a poor woman, a workingman, and what they all had to contend with besides the mere disease. He was well informed, and his chronicler was a learner from him, but there was an appeal to him in the humanity of the subject. It was largely poor and unlettered people that he had his work with. Sometimes they were evil, and he could be exceedingly severe and rough with them, so that a sort of joy of mastery in his big nature was revealed." Then our author tells how his hero became a doctor; how, without money and with tuberculosis, he sought employment as a guide, was seen and appreciated by medical men and launched upon his beneficent career. His life was eventful. "The choppers in the wood camps often injure themselves frightfully with their axes or by falls. One day, getting word of such, he drove several miles to the lake, fastened his horses and rowed across the lake and tramped a mile to the

camp. Temporarily fixing up his patient he had a litter made and the men carried their comrade back to the lake; there he lifted him with his strong, trained arms into the boat, rowed across, picked him up and put him into his carriage, and so brought him home and eventually cured him up. He has no rubber-tired ambulance and hospital with trained nurses at command." "Sometimes, when there was special prevalence of sickness, he would go for one or two weeks without a night in bed. He would get home, have his horses fed and rested, lying, himself, by the kitchen fire for a spell, and then start out in another direction. While his horses plodded along the narrow way he slept. Everybody knew him, for he had followed his work for years, and all helped him on; meeting him sometimes with vehicles going in the opposite direction, they would lead his horses aside, and, having passed, set them on their way again without arousing him. The horses would sometimes stop at a watering trough, and the first passer-by would uncheck them to drink and then start them on while he still slept. All knew the nature of his errands and understood the demands on his physical resources."

Thus does a ray of the Divine dart into the reckless material life of our day. It is with no small satisfaction that the *ANNALS* records this excursion into general literature of its first editor—the Nestor of Albany annalists. More power to his pen. All glory to the Physician in Literature. All honor and love to the Country Doctor!



The Remote Effects of Gonorrhea Certain aspects of some of the more common diseases are of such paramount importance to the community in general that frequent reference to them may be pardoned. This is particularly true of certain preventable infectious diseases, and when a disease is preventable, in the sense that gonorrhea and syphilis are preventable, and can, if neglected, give rise to such deplorable results, the profession cannot too often have dinned into their ears the necessity for prophylaxis. In the past ten or fifteen years numerous articles have appeared from the pens of gynecologists referring to the effects of gonorrhea upon women, and deploring, very naturally, the fact that the onus of gonorrheal infection often fell upon the respectable married woman,

whose husband had in bygone years worshipped too freely at the shrine of Venus. During the same period that such statements have been appearing various experts in genito-urinary affections have published statistics as to the frequency of gonorrhea in the male, and have also made assertions which have greatly modified our ideas as to the curability of the disease. We think it can be fairly said that in certain quarters the statements of the gynecologists and genito-urinary surgeons have produced an almost hysterical attitude toward the question under discussion. It must not be forgotten that the statements regarding the frequency of gonorrhea in men, and also those regarding the frequency with which married women are infected by their husbands, have been given out by specialists, and while we realize the necessity of specialism if medicine is to be advanced, we must not overlook the fact that the specialist sees picked groups of cases, and consequently is hardly in a position, no matter how unbiased he may be, to get at the truth regarding the frequency of the diseases which are included in his specialty among the general public.

It seems probable that a general practitioner, especially one who is interested in the subject, could give more accurate information on the subject, and for this reason we believe that the recent study of Erb (*Münchener medicinische Wochenschrift*, 1906, LIII, 2329) is of great value. The older statistics regarding the frequency of gonorrhea in the male show a good deal of variation, but all put the percentage of men who are infected very high. Ricord stated that eighty per cent. of the male inhabitants of Paris had had gonorrhea; his successor, Fournier, contents himself by saying that it is an extraordinarily frequent disease. Recently Blaschko, by what seems to us an unjustifiable manipulation of figures, has made out that every man who does not marry till the age of thirty has had gonorrhea at least twice. Erb's figures, which, as he admits, bear mainly upon those in the middle classes, show that probably forty-nine per cent. of men have gonorrhea, most of them before the age of twenty-five years. Regarding the cure of the disease, and it has been asserted on high authority that gonorrhea is practically never cured, Erb concludes that forty-five per cent. of the infected individuals recover so that they present no sign whatever of venereal disease.

As to the effect of gonorrhea in the male upon marriage, and particularly its effect upon the wife, numerous statements have

been made in recent years. Wild statements that hundreds of thousands of innocent women are infected have appeared in print. It has been stated that from seventy to eighty per cent. of instances of sterility are due to gonorrhea, and it has been claimed that old gonorrhoids are apt to have but one child. Against these extreme views there has been a reaction in some quarters; such authorities as Czerny and von Rosthorn have claimed that the statements as to the number of women infected by their husbands have been greatly exaggerated. Erb's figures show that this is the case, for, according to him, probably not more than four and twenty-five hundredths per cent. of married women contract serious gonorrheal infections from their husbands. Furthermore, it is shown that in marriages where the husband was an old gonorrhoid, sterility is not more common than under other circumstances, and that infection of a wife is exceedingly uncommon if a period of more than two years has elapsed between the husband's last attack of gonorrhea and his marriage.

It must be pointed out, and Erb himself acknowledges, that his statistics are drawn from a particular class. It is highly important that further inquiries along the same line should be carried on, not only as regards different classes, but also in different countries. Whilst Erb's figures show that the relation of gonorrhea to marriage, and particularly its deleterious effect, has been viewed from an alarmist's standpoint, his figures as they stand are, to use an apt but ancient remark, "a sad commentary upon our much-vaunted civilization." Like the voice of the boy who cried "wolf" when there was no wolf, the voice of the alarmist is apt to be heard but not heeded, but when all is said and done the subject remains one of great seriousness, and one which we believe should be vigorously attacked along educational lines.

GEORGE BLUMER.

Little Biographies

XIII. NICOLAUS STENO.

NICOLAUS STENO, the distinguished Danish anatomist, was born in Copenhagen January 10, 1638. He curiously combined in his career the laboratory methods of the modern scientist with the religious zeal of the devout churchman of the middle ages.

When eighteen he began the study of medicine and Hebrew at the University of Copenhagen and chose for his professional preceptor the celebrated anatomist Bartholini. He pursued his medical studies, especially anatomy, with such industry that he gained the approbation of his teacher who urged him to continue his anatomical studies in Holland at the Universities of Amsterdam and Leyden.

It was at Amsterdam while pursuing his anatomical investigations under Blasius that he made the discovery of the duct of the parotid gland to which was afterwards given the name of the discoverer. He thus describes this discovery—"whilst examining the veins and arteries of the head of a sheep, the point of my knife, no longer wedged in between the tissues, moved freely in a large cavity, and as I pushed it forward, produced a sound by striking the teeth." The priority of this finding was claimed by his teacher Blasius, and as a result of the ill feeling engendered, Steno left Amsterdam for Leyden, where he worked under Sylvius and Van Horne.

After traveling for a time he returned to Copenhagen in 1664 with the hope of appointment as professor of anatomy. He published at this time "Anatomical Observations Concerning the Muscles and Glands," demonstrating that the heart was a muscular organ. He thus removed its conception from the realm of religion and romance and laid the foundation for the better appreciation of the mechanics of the circulation of the blood which had been described shortly before by Harvey.

Disappointed in his expectation of appointment to a professorship, he left Amsterdam and journeyed to Paris, where his scientific knowledge and rare spirit of investigation gained for him admission to the inner circle of French savants. While in Paris he formed an intimate acquaintance with the eloquent French divine Bossuet, who probably exercised a great in-

fluence over Steno and affected materially his career. In 1665 he went to Rome, later to Florence, which was then the gathering place for distinguished men from all parts of the world. His reputation won for him a kind reception and the Grand Duke Ferdinand of Tuscany appointed him his body physician and gave him an appointment at the hospital of Santa Maria Nuova. In 1667 his studies upon muscles, embryology and generation were published, and about this time he made known his investigations upon the geological formation of the Apennines. His fame as a scientist had now become so generally recognized that he was called in 1672 to the professorship of anatomy in the University of Copenhagen, although he had several years before become a convert to the Catholic faith.

His inaugural address showed that his scientific spirit had become deeply tinged with intense religious fervor. "It is the true, higher object of anatomy to direct the beholder through the astonishing structure of the body to the dignity of the soul and finally to lead him through the wonders of both to knowledge and love of the Creator. On beholding a statue or a picture we ask 'who is the master?' How much more must we make this inquiry when examining the structure of the human body: Futile and beneath the dignity of science are the efforts of those who would make a handmaid of anatomy to prevent or cure disease." Two years later he resigned his professorship, having become involved in religious controversy, and returned to Florence where the Archduke invited him to instruct the royal children in Christian philosophy.

The year following, in 1675, he decided to give up his profession and entered the priesthood.

This step ended his scientific career and from this time on his life was spent in a vain attempt to restore the northern countries to the Catholic church. He was made titular bishop of Titiopolis in Greece and apostolic vicar for Hanover and the northern missions—Denmark, Sweden and Norway. His strongly ascetic life mitigated against his churchly activity under the trying conditions of that period and was probably responsible for the curtailment of his life. His theological writings are not important and his work as a Catholic bishop was not fruitful.

Wearied with his disappointments, he was making preparations to return to Italy when he died November 26, 1686, in Schwerin, Germany.

His body at the request of the Grand Duke was brought to the land he loved so well, and buried in Florence.

In 1881 the delegates to the International Geological Congress resolved to erect a memorial to one who had been a pioneer in the science of geology, and two years later a marble bust was placed over his grave in Florence, inscribed:

Vir inter geologos et anatomicos.

ANDREW MAC FARLANE.

XIV. FRIEDRICH GOLL.

FRIEDRICH GOLL, whose name is so intimately associated with the anatomy of the spinal cord, was born in Zofingen, canton of Aargau, Switzerland, on the first of March, 1829. He was still a child when his parents moved to Zürich where he received both his early and professional education, being admitted to the study of medicine in 1847. He had as teachers: Heer and Naegeli in botany, Ludwig in physiology and Lebert and Billroth in clinical medicine. The years 1850 and 1851 he spent in Würzburg working under Kölliker and Virchow. He then returned to the University of Zürich, from which he obtained his degree in 1853. Leaving his home a second time, he repaired to Paris, becoming there a pupil of Claude Bernard, with whom he remained two years.

He began the practice of medicine in Zürich in 1854 and assumed, in 1865, the direction of the Institute of Pharmacology in preference to that of the Polyclinic of the University,—a post which had been previously offered to him. It was only 1885 that Goll was made a professor extraordinary at the University of Zürich. In 1900, while on a pleasure journey through southern France, whither he had gone to recover from the fatigues of an overtaxed professional life, he met with an accident at Nice and developed, as a consequence, aphasic manifestations, but especially symptoms of impaired power of mental concentration and sustained application to study, which disability greatly interfered with the performance of his functions as a professor of the University. He never regained his former mental activity, although he remained physically strong up to the time of his death in 1903.

Of Goll's contributions to the science of medicine, his de-

scription of the tract of fibres which bears his name (Ueber die feinere Anatomie des Rückenmarks, 1868) undoubtedly ranks first. That he should have recognized and demonstrated the perfect individuality of the postero-internal sensory tract of the cervico-dorsal region of the spinal cord, at such an early period of Neurologic history when methods of anatomic study were still so crude and primitive, is an achievement eminently worthy of admiration and indelible record. Goll had already given indications of his fondness for anatomic research when he published his monograph on the distribution of the blood vessels in the spinal cord in 1864 ("Die Verteilung der Blutgefäße auf die Rückenmarksquerschnitt"). His thesis of 1853, he had devoted to the study of the influence of blood-pressure upon renal secretion ("Einfluss des Blutdruckes auf die Nierensekretion").

Goll seems to have acquired considerable reputation in genito-urinary medicine, and was considered an authority on the subject by the public. This statement is further borne out by the fact that he published an article on the treatment of gonorrhoea by means of thalline injections.

All of Goll's scientific efforts were made during the earliest phase of his medical life; he very rapidly acquired an extensive practice which unfortunately ruled out all possibility of further devotion to the interests of the science he was so admirably qualified to serve.

Of Goll as a man, Eichhorst speaks in the highest terms, dwelling with much genuineness of feeling upon his rare kindness of disposition and charitable nature. Goll took an active part in caring for the sick and wounded on the battlefields of 1871. Loved by all who had received his professional attentions, he was also the friend and adviser of pupils and students, in whose minds he represented that most desirable type of teacher whose personality is free from all taint of unapproachable grandeur. Although continually overworked and producing no literature himself, Goll took at all times the greatest interest in medical discussions, and was for ten years president of the Medical Society of the Canton of Zürich.

LA SALLE ARCHAMBAULT.

KEMPER.
EICHHORST.

The World's Anatomists, Philadelphia, 1905.
Nekrolog, *Deutsche Mediz. Wochen.*, 1904, No. 2, p. 71.
Biographisches Lexikon der hervorragenden Aerzte, 1885, No. 2, p. 595

Scientific Review

THE SPIROCHAETE PALLIDA IN SYPHILIS.*

Since Dr. Carey's review of this subject appeared in the ANNALS for January, 1906, the literature has become so extensive and the discoveries made have been so important, that it seems desirable to publish a supplementary report. It will, perhaps, be well to consider the various aspects of the subject in a series of subheadings.

The frequency with which the spirochaete pallida has been found in syphilitic lesions. In their earlier papers, Schaudinn and Hoffman reported the frequent, but not constant, occurrence of the organism in the lesions of primary and secondary syphilis. In the last series of seventy cases published by them, in which the disease was in the primary or secondary stage, spirochaete pallida was found in every examination. Other observers have been less successful, but all agree that the organism is very difficult to see, that certain persons seem to have a knack of finding it, and that as experience increases the number of successful finds also increases. In 519 cases collected from the literature, in which the clinical diagnosis of primary or secondary syphilis had been confidently made, the organism was found in 448. Many of the observers in this series found them in a much larger proportion of cases than these figures indicate, as, for example, Roscher 96 times in 100 patients, Sioli 26 times in 29 patients, Flugel 29 times in 29 patients, and Sobernheim and Tomaszewski 50 times in 50 patients.

While positive results have been the rule in the examination of primary and secondary lesions for spirochaete pallida, the same has not been true of tertiary lesions. Of twenty-five instances in which tertiary lesions were examined, but seven were positive, two of these being reported by Ritter and five by Tomaszewski. The latter observer records that he spent as long as ten hours in some instances before finding the organism, and states that they are present in very small numbers. These findings overthrow the view held soon after the discovery of the organism, that it appears during the tertiary stage in a different form. The finding of the spirochaete in tertiary lesions shows

*Most of the important literature on this subject can be found in two reviews by Hübner—Dermatologische Zeitschrift, Bd. xii., p. 718, and Bd. xiii., Hft 6.

that the disease is infective in this stage, a view which has been held by a few syphilographers for many years, and which has also been substantiated by Landsteiner and Finger who produced syphilis in an anthropoid ape by inoculating it with large quantities of gummatous material.

In congenital syphilis, striking results have been obtained since the introduction of the silver impregnation method of staining by Bertarelli and Volpino, and its modification by Levaditi. We have been able to collect records of examinations of the tissues of thirty-four children dead of undoubted hereditary syphilis, and twenty-eight of this number were positive. The negative results were probably explained in a few instances by the fact that old tissue, long in museums, was sometimes used, and doubtless the percentage of successes should be higher. The largest number of spirochaete in these cases has usually been found in the liver, and this, together with the fact that the organisms are also found in the placenta and cord, makes it certain that transmission takes place through the blood. As a rule the organ most extensively diseased has shown the largest number of spirochaete, and the number present in many instances can only be described as enormous. The parasites have been found in the adrenals with or without chronic inflammatory changes, in the syphilitic hepatitis, the osteochondritis, the skin lesions, the white pneumonia, the pancreatitis, and also in the heart muscle and spleen.

In experimental syphilis in the higher apes the spirochaete *pallida* has now been demonstrated a number of times. It has been possible to inoculate the disease from the blood of a syphilitic patient, though experience shows that it is not easy to find the organism in the blood with the microscope. The spirochaete have been found not only in an ape inoculated from man, but also in one in which inoculation was made from another ape.

The situation of the spirochaete. The relation of the spirochaete to specific lesions is of great interest. The parallelism between the number of the spirochaete and the severity of the lesions in hereditary syphilis has just been mentioned. The relationships, as seen under the microscope, with cells, vessels, nerves and other structures are also of interest. Generally the spirochaete seems to be an intracellular parasite, but there are exceptions to this rule, and Bandi and Simonelli state that, especially in skin lesions, the organisms may be massed inside cells

in a manner which suggest the intracellular grouping of some forms of protozoa. The localization of spirochaete in the vessel walls is very common, and in connection with the well-known tendency to vascular change which characterizes the disease, is very suggestive. Ehrmann has described the parasites in the nerve sheaths and even between the axons in chancres. He suggests that cases in which this occurs may be the ones which afterwards develop parasymphilitic nervous lesions. The presence of spirochaete has also been noted in lymph spaces, in blood vessels and in the alveoli and bronchi of the lungs.

The recognition of spirochaete pallida. Since the earlier publications reports have appeared from time to time claiming that organisms indistinguishable from spirochaete pallida may be found in non-syphilitic lesions. Spirochaete more or less resembling the pallida have been described in acuminate condylomata, in ulcerating carcinomata and in pus from a periurethral abscess. There is little doubt that spirochaete as a species are widely distributed organisms, indeed some common forms that occur in the mouth have long been known. That these may be mistaken for the pallida by those with insufficient experience is also true. Many of the organisms which were supposed to be pallida, and which came from non-specific lesions, were subsequently submitted to Schaudinn or Hoffman, and in all instances it was shown that they were not pallida, and that the mistake was due to lack of experience on the part of the observer who described them. In collecting figures bearing on the frequency with which spirochaete pallida was found in syphilitic lesions records were found of 125 controls made by five observers, and every one of them was negative. Schaudinn, in discussing the distinguishing features of spirochaete pallida lays stress upon the following points:—

1. The slight thickness as compared with the length.
2. The number of curves, from ten to twenty-six.
3. The close coiling of the curves.
4. The slight degree of coloration.
5. The reddish tint of the organism with Giemsa's stain.
6. The pointed ends.

There have been a few observers who have claimed that the structures described as spirochaete were not parasites at all. One zoologist claimed that the spirochaete in smears were

deposits of dextrin from the Giemsa stain. Unfortunately for this theory, there is no dextrin in the stain. Another zoologist has stated that the spirochaete observed in sections stained by the silver method are nerve fibrils or fine strands of connective tissue. The number of negative controls is sufficient to disprove this, and there are other reasons. The most important of these have been pointed out by Levaditi. They are (1) That the same method of coloration stains well-known spirochaete like the spirochaete gallinarum and the spirillum of tick fever. (2) That smears from an organ which shows the silver-stained spirochaete show the same organism when stained by Giemsa. (3) That the spirochaete are most numerous where the lesions are most marked, especially about the altered vessels. (4) That regular colonies of spirochaete are found in the liver in congenital lues. (5) That the spirochaete are found in the interior of blood and lymph vessels where nerve fibers or connective tissue fibers could not be present.

The nature of the spirochaete pallida. To just what group of parasites the spirochaete pallida belongs is still a debated question. Schaudinn was inclined to place it with the trypanosomes. Various characteristics of the organism have been described that would justify such a classification. Schaudinn thought that he distinguished a faint undulating membrane, others have reported longitudinal division, a grouping in cells like that common in trypanosomes, and a tendency to multiply at night. On the other hand Kočh and Metschnikoff are both inclined to regard the organism as a bacterium, and, so far as definite evidence to the contrary is concerned, this view seems justifiable.

Is spirochaete pallida the cause of syphilis? In the vast amount of published observation bearing on spirochaete pallida, papers which disprove or disagree with the original work of Schaudinn and Hoffman are very much the exception. In the great majority of instances the original statements of these observers are confirmed. There is little doubt that the spirochaete pallida is present in the lesions of every case of syphilis in the primary and secondary stages, and, though this is more difficult to prove, probably in the tertiary stages also. It is impossible, so long as the organism cannot be cultivated, to prove with absolute certainty a causal relation between it and syphilis. Aside from its constant presence in the lesions it is to be noted that it is also present in experimental syphilis, and that the

disease has been produced in the anthropoid ape by inoculation with the blood of a syphilitic. Taking all these facts into account there is little reason to doubt that the cause of syphilis has at last been found.

Practical value of the discovery. Instances have already been published by Flexner, Hoffman, Danziger and others, in which the presence of the spirochaete pallida has enabled a diagnosis to be made in doubtful cases or has rendered possible the recognition of the disease at an early stage. At present most practitioners delay treatment in patients suspected of having syphilis until definite secondaries appear. There is little doubt that it would be of benefit to the patient if treatment could be begun as soon as the primary lesion appears. The certain recognition of the parasitic nature of the disease also suggests the possibility that it may be advisable to excise primary sores, not that the disease could be checked in this way, but because it possibly might be rendered less virulent. In the present state of our knowledge the difficulties in the way of recognition of the organism have made it impossible to examine for it in a routine way. There is no question that in time staining methods applicable by the physician of average experience and ability will be perfected, and we may then expect that examination for the spirochaete pallida will be as common and as useful as examination for the tubercle bacillus.

GEORGE BLUMER.

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

A regular meeting of the Society was held in Alumni Hall of the Albany Medical College on Wednesday evening, November 7, 1906. The meeting was called together at 8.45 p. m., the President Dr. Lempe in the chair. The following members were present: Drs. Bartlett, Bedell, Beilby, Bendell, Blessing, Bristol, Cook, Craig, Curtis, Gutmann, Giffen, Hacker, Hinman, Jenkins, Keough, Keens, Laird, LeBrun, Lempe, Lomax, MacFarlane, MacHarg, Merrill, Moore, C. H. Moston, Newell Neuman, O'Leary, Jr., Papen, Sr., Pease, Reid, Rulison, Ryan, Sampson, Shaw, Theisen, Vander Veer, A., Vander Veer, E. A., Vander Veer, J. N., Ward, Winne, L. B.

1. *Reading of the minutes of the last meeting.*

The minutes of the last meeting were read by the Secretary. Dr.

WARD moved that the minutes be accepted and adopted as read. The motion was seconded and carried.

2. *Reception of reports of officers and committees.*

No officers or committees reported.

3. *Election of members.*

No names were presented.

4. *Unfinished business.*

The PRESIDENT stated that in accordance with the motion made at the annual meeting, "In view of the fact that members of our profession, including several former members of our Society, have suffered loss in the recent disaster in San Francisco, be it

Resolved, That the Secretary be directed to send out subscription blanks to each member of the Society and that the Treasurer be empowered to receive contributions to be forwarded to the Treasurer of the San Francisco County Society."

Subscription blanks had been sent out and the sum of six dollars and twenty-five cents had been received by the Treasurer.

Dr. HINMAN moved that the amount received be refunded to the contributors.

The motion was seconded and carried.

5. *New business.* No new business was brought before the Society.

6. *Scientific program.*

Dr. J. N. VANDER VEER read his paper:

"Report of Cases Treated by a Modified Bier-Klapp Method of Hyperemia."

In the discussion of this paper Dr. BEILBY said, that he was very much interested in the subject. Comparatively little American literature had appeared regarding these methods, though there had been many important contributions in the German periodicals. Thousands of cases have been reported in which these methods have been employed. Most of the reports have been favorable. There are two distinct methods of producing hyperemia, one by suction apparatus as described by Dr. Vander Veer, and the other by constricting bands placed around the limb or part treated proximally to the infected area. Dr. Beilby stated that he had had some interesting experiences with the latter method, having employed it recently in three cases, twice in extremities and once about the neck for infection of the scalp. He gave the history of these cases briefly as follows:

CASE I.—53 years of age, a hard drinker. In an attack of delirium tremens he had sustained a compound fracture of the tibia. The distal end of the upper fragment was protruding from the wound. There was a seropurulent discharge with a foul odor. The condition had been treated by hot packs. But little reaction had been obtained owing to the state of low vitality in the tissues. Cultures had shown the presence of streptococcus infection. An elastic band was applied just above the

knee and left on for three or four hours. After the first application the discharge increased as is nearly always the case, but after two or three days diminished. Healing progressed satisfactorily to complete cure. During its progress a small piece of necrosed bone was removed.

CASE 2.—The patient was injured by a falling axe causing a fracture of the outer table of the skull. Symptoms of meningitis developed. Dr. Beilby trephined at the hospital and the convulsions ceased. There was, however, considerable suppuration of the soft parts which afterward extended to the bone about the trephine opening. In this case an elastic band was placed about the neck. It was surprising to find how readily the patient submitted to the treatment and how little discomfort was caused by the band about the neck. At first, as usual, there was an increase of the discharge, but later a diminution. The osteo-myelitis persisted for several months, but the progress of the case toward recovery was evidently much hastened by the treatment.

CASE 3.—In this case there was a perforating ulcer of the sole of the foot due to staphylococcus infection. There was a deep sloughing sore showing little tendency to heal, the reaction of the tissues being slight. An elastic band was applied at the ankle after the removal of the necrotic area. Dr. Beilby was very certain that the stay of the patient in the hospital was lessened two weeks by the treatment.

The constriction method or "Stauungs" hyperemia has the advantage over the suction or "Saugen" hyperemia method that it can be employed in the treatment of ambulatory cases and is thus applicable to dispensary work. Dr. Beilby stated that in these methods he believed we had a very valuable adjunct in the treatment of acute infectious processes.

Dr. LE BRUN stated that it was his pleasure while at Vienna this past year to see the Bier Method of producing artificial hyperemia by means of rubber bands used in the Politzer clinic for diseases of the ear. Good results were obtained when the method was employed within two or three days of the onset of the disease. Cases that were a week old were only partially successful, while results were very poor in chronic cases.

In closing the discussion Dr. J. N. VANDER VEER wished to emphasize, for the benefit of members who had not had an opportunity to familiarize themselves with the literature, the fact that there were two entirely distinct methods for producing artificial passive hyperemia, the "Stauungs method" and the "Saugen method." In the former case the hyperemia is produced by a constricting band, in the latter case by suction apparatus. The use of suction apparatus was suggested and carried out by Dr. Klapp, Prof. Bier's assistant. The results obtained in Bier's clinic are the more impressive when it is known that a "cure" there means that perfect function has been obtained in the diseased joint, not merely that the local process has cleared up, leaving a stiff joint.

A number of pictures illustrating the various forms of apparatus used were passed around among the members of the society. The various forms of suction appliances were also demonstrated.

Dr. SHAW read for himself and Dr. BALDAUF their paper: "Congenital Stenosis of the Duodenum. Report of a Case."

In the discussion of this paper Dr. CRAIG said that he had listened to Dr. Shaw's paper with a great deal of interest. The Society could not have too many papers of such character presented to it. Conditions such as had been described in Dr. Shaw's paper were of considerable interest from an anatomical and developmental standpoint. The more complicated a structure is, the more likely is it to show some anomaly of development. The peritoneum being the most complicated of all the serous membranes showed the greatest number and variety of departures from type. Some of the abnormal changes which take place in the digestive tract during the process of development are very remarkable. Many of them are due to the shifting of the peritoneum situated about the blood vessels. There resulted from this shifting, folds of peritoneum bounding peritoneal fossae. Most of the peritoneal fossae are formed in this way. It may be said that conditions similar to those described by Dr. Shaw in his case, may be caused by constricting bands formed by this shifting process. Hour-glass constriction of the stomach may in some cases be produced in this way. A few years ago Dr. Archambault presented before the society a case of complete atresia of the intestines. While not a case similar to that of Dr. Shaw's, it illustrated other changes which may take place from defective development. In addition to the causes of the conditions in the case mentioned by Dr. Shaw, defective innervation has been offered as a possible explanation.

Dr. GUTMANN referred to the recent work of Ochsner and Moynihan. Defects are due to arrest of development or to excess structure. The occurrence of persistent vomiting after certain operations on the biliary passages and stomach led to careful anatomical study of the neighboring parts. Autopsies by Dr. Ochsner showed that hyperplasia of muscle existed in many instances, there being definite muscular bands several centimeters wide in the duodenum. There is considerable literature regarding the occurrence of such anomalies in the adult.

Dr. A. VANDER VEER said he was glad the Society was again entering upon an era during which pathological specimens were shown at the meetings. The specimen exhibited this evening was a rare one and he had seen but one other like it. Dr. Ochsner, at the San Francisco meeting of the American Surgical Association, presented a paper, also some specimens of the duodenum which plainly showed evidence of stricture points, and believed to be the result of lack of development in the foetal life. He also presented a second paper, on the same subject, at the Cleveland meeting and the two papers are of great value, bearing, as they do, upon possible congenital strictures of the intestinal tract. It is not beyond the range of possibility that such conditions, as spoken of by Dr. Ochsner, sometimes cause serious trouble after operations.

Regarding the case reported by Dr. Shaw, I am much interested in the doctor's suggestion, as the cases operated upon seem to have been fatal. I presume in a case just like the one reported, no operation could have saved the life of this child. I saw the case in consultation

with Dr. MacFarlane. It was demonstrated that the bowel movements contained bile and we decided not to employ surgical intervention. The autopsy evidenced the wisdom of the decision and was comforting, as the surgeon in his own mind thinks over regarding an early operation to grant relief. Such cases are very instructive, regarding our knowledge of embryology, but from a medical and surgical standpoint it does not seem as though much could be done for their relief.

The PRESIDENT said that he wished to speak of a matter to which reference had been made in Dr. A. Vander Veer's remarks, namely, the exhibition of pathological specimens at meetings of the Society. In looking over the Society records some years back he had been struck by the fact that there was scarcely a meeting recorded at which pathological specimens were not presented, sometimes ten or fifteen of them at a meeting. He hoped that arrangements could be made this coming winter for a return to the old custom. He planned to have fifteen to thirty minutes before the regular session devoted to the presentation of such specimens and perhaps interesting patients might also be presented.

On motion of Dr. JENKINS the Society adjourned.

After adjournment the Society met informally in the Faculty Room where a lunch was served.

ARTHUR T. LAIRD, *Secretary.*

GEORGE GUSTAVE LEMPE, *President.*

A regular meeting of the Society was held in the Alumni Hall of the Albany Medical College on Wednesday evening, December 12, 1906. The following members were present: Drs. Ball, Bailey, Bartlett, Bedell, Beilby, A. J., Blessing, Bendell, Branan, Classen, Curtis, DeVoe, Galrick, George, W. H., Gutmann, Hacker, Hinman, Holding, Jenkins, Keens, Keough, Laird, Lanahan, Lempe, Levy, Lomax, MacFarlane, McKenna, McHarg, Moore, C. H., Moston, Myers, Muller, Murray, Neuman, Newell, O'Leary, Jr., Papen, G. W., Sr., Pease, Powell, Reid, Rooney, Root, Rulison, H., Ryan, Sabin, Sampson, Stillman, Stevenson, Theisen, Traver, Trego, Vander Veer, J. N., Ward, Washburn, Wiltse, Winne, C. K., Winne, L. B., Zeh. Before the regular business session Dr. Robinson, of the Bender Laboratory staff, demonstrated a series of pathological specimens.

1. Reading of the minutes of the last meeting.

Dr. JENKINS moved that the minutes be adopted as read by the Secretary. The motion was seconded and carried.

2. Reports of officers and committees.

No reports were received.

3. Election of members.

The President announced that in accordance with the by-laws, the name of Dr. HAROLD D. COCHRANE had been proposed and approved by the Board of Censors.

The President appointed as tellers Drs. Hinman, Jenkins and Traver. Thirty-four ballots were cast. Of these the tellers announced that

the candidate received twenty, which was less than the two-thirds required for election.

The President declared the candidate not elected.

4. *Unfinished business.*

No unfinished business was brought before the society.

5. *New business.*

Dr. HACKER made the following motion:

"That the Committee on Public Health investigate as to the existence of an ordinance in the city and county of Albany prohibiting the sale of ice for food or table purposes which is cut from bodies of water that are used for skating purposes or as skating rinks.

"If such ordinance does not exist to request the Committee on Public Health to endeavor through our representatives in the Board of Aldermen of the city and the Board of Supervisors of this county to enact such an ordinance."

The motion was seconded, carried and referred to the Committee on Public Health.

Dr. HACKER moved:

"That the Committee on Public Health be requested to request the Commissioner of Public Safety of the City of Albany to place charity diphtheria antitoxin, after the office hours of the Department of Health, in the office of the Chief of Police in the city of Albany; so that it can be had at all hours of the night readily by physicians and patients who will sign the proper blanks."

The motion was seconded, carried and referred to the Committee on Public Health.

Dr. HACKER moved:

"That the Committee on Public Health endeavor to secure the passage of an ordinance by the Board of Aldermen in the city of Albany making fumigation of apartments compulsory in which cases of pulmonary tuberculosis have been treated, namely after removal from one apartment to another or after death.

"Making it compulsory that physicians in attendance upon cases of pulmonary tuberculosis report such instances of removal from one apartment to another to the Health Department."

The motion was seconded, carried and referred to the Committee on Public Health.

6. *Scientific program.*

Dr. THEISEN read a paper on "The Importance of Waldeyer's Lymphatic Ring."

In the discussion of this paper Dr. HINMAN said that the tonsils were the port of entry for various infections. One of the least important of these infections from a clinical standpoint, but still one to be borne in mind, was infection with the pneumococcus. Occasionally pneumococcus infection of the tonsils simulates the ordinary angina and there is present the glazed appearance seen in the ordinary streptococcic sore throat. In certain instances the pneumococcus infection simulates diphtheria and can only be distinguished from it after bacteriological examination. Some

of these cases develop pneumonia. Occasionally there is gastric infection with the pneumococcus. Three fatal cases have been reported.

Dr. HOLDING stated that operations which he had seen in Dr. Ochsner's clinic in Chicago for the removal of infected lymphatic tissue were very thorough. He believed that no operation for the removal of cervical adenitis was complete unless the "lymphatic ring of Waldeyer" was as thoroughly eradicated with curette, tonsilotome and tonsillar punch as modern technique will allow.

Dr. GEO. S. EVELETH of Little Falls, read, by invitation, a paper on: "What Shall We Eat? What Shall We Drink? and How Shall We Be Saved?"

Dr. STILLMAN moved that a vote of thanks be given to Dr. Eveleth for his interesting and instructive paper.

Dr. WARD, in seconding the motion, said that he had very much enjoyed the paper. It was instructive in an amusing way. He was inclined to think times were more strenuous now than in the days of the patriarchs.

Dr. STILLMAN replied to Dr. Ward's remarks and supported Dr. Eveleth's view of the matter.

The motion was carried, unanimously.

HOLMES C. JACKSON, Ph. D., Professor of Physiological Chemistry in the Albany Medical College, read, by invitation, a paper: "The Importance of Intra-cellular Enzymes in Physiology and Pathology."

Dr. MACFARLANE stated that he felt as others in the Society must also feel, a personal incompetence to discuss Dr. Jackson's interesting paper. He was convinced that there was a magnificent future for medicine along the lines of Physiological Chemistry. He moved a vote of thanks by the Society to Dr. Jackson for his able, scholarly and interesting paper.

The motion was seconded and carried.

On motion of Dr. WILTSE the Society adjourned.

After adjournment a lunch was served in the faculty room of the college.

ARTHUR T. LAIRD, *Secretary*.

GEORGE GUSTAVE LEMPE, *President*.

MEMORIAL MEETING—JOSEPH D. MONTMARQUET.

A special meeting of the Medical Society of the County of Albany was held in Alumni Hall of the Albany Medical College, Monday afternoon, December 17, 1906, at 5:30 o'clock, to take action on the death of J. D. Montmarquet, M. D., of Cohoes.

The President stated the object of the meeting, saying that he had to announce a sad misfortune which would cause great sorrow in the Society. He had appointed the following committee to draw up memorial resolutions: Drs. J. L. Archambault, J. H. Mitchell, A. Vander Veer, S. B. Ward, F. C. Curtis. Dr. Archambault in behalf of the committee read the following resolutions:

MEMORIAL

Dr. Joseph Didier Montmarquet.

Hardly two months have passed since, as Vice-President of this Society, Dr. Montmarquet appeared before you to deliver the usual semi-annual address, and that esteemed officer is no more.

All who knew him thought that he had many years of life and usefulness before him, but death had marked him, and, falling a victim to a complicated course of typhoid fever, he has, after four weeks of hard struggle, departed from this world in the prime of his life and at the very height of an unfinished and most promising career, leaving behind him a heart-broken young and devoted wife and a large family of young children. It is the sense of your committee that at no time in the history of its membership this Society has had to put on record a sadder occurrence.

Dr. Montmarquet was a good man, an exceedingly good man. He was a man of modesty and of true kindness and integrity. He was not intrusive nor obtrusive, and neither aggressive nor vindictive. He was upright, faithful and industrious. He was of judicial, healthy and well-balanced mind, singularly free from all affectation and all bombastic disposition. While firm in his convictions, he would not press his opinions, and never would show bitterness in his judgments. He was, as we all should be, good without weakness or complacency, searching in everybody, not the weak point, but the fair side. He had no time to spare for finding people's faults; they were of no interest to him and rather appeared uselessly depressing. On the other hand, nothing escaped his attention that was good and pure, and in this he delighted as an incentive to nobler aims and pursuits. Modest as he was, his modesty made him at times rather diffident of his skill and of his resources; but as he now lies cold in his grave, perhaps his spirit remains free of the melancholy retrospections which visit the more daring.

The love of his profession, the devotion to his patients, and his unswerving loyalty to his brother practitioners, formed the distinctive traits of his public life, and it is through their powerful agency—so it is always—that the doctor found himself gradually at the head of one of the largest practices in Cohoes. His serviceableness to his confreres had no bounds, and his charity for his patients was inexhaustible; at any hour of the day or night he was at their command. Thus, as a physician, he has won the esteem and confidence of the people, and to this day none stood higher in the community as a conscientious, painstaking and well-informed practitioner.

As a husband and father his life has been a model one. The love of his family has been carried by him to the height of a religion. The father of nine children—the oldest barely fourteen, the youngest only four months—he devoted every moment of his life (except when on professional duty) to their comfort, happiness and entertainment. To the oldest he would be the companion of their plays as well as of their studies; with the little ones, he would be merry-making and excite their prattle; of everyone, he would share the little sorrows and the big funs.

The loss of a father is for any children an irreparable evil, but the large family our confrere leaves behind will have exceptional reason to regret a father so indispensable to their welfare. Heavy as the blow has fallen upon them, heavier still on the bereaved young mother, we beg her to permit this Society to extend to her the expression of our sincerest sympathy, and to mourn with her and her children their great loss. May she rest assured that, as fellow-workers, we will like to recall and cherish the memory of her kind husband, and, as members of this Society, keenly feel that death has deprived us of one of our most esteemed associates.

J. L. ARCHAMBAULT,
J. H. MITCHELL,
A. VANDER VEER,
S. B. WARD,
F. C. CURTIS.

Dr. WARD moved that these resolutions be entered on the minutes of the Society, that a copy be sent to the widow and that they be published in the ALBANY MEDICAL ANNALS.

The President suggested that a committee of the Society be appointed to attend the funeral.

Dr. A. VANDER VEER moved that the President appoint such a committee. The motion was seconded and carried.

The President appointed the following committee: The President, the Secretary, Dr. G. E. Beilby, Dr. E. A. Vander Veer.

Dr. MITCHELL then spoke as follows:

"In connection with the sad death of Dr. Montmarquet, the expression in the hymn 'Some day we'll understand' has been ringing in my ears. Dr. Montmarquet in the prime of life and usefulness has been taken away at a time when he was most needed in the community. As the father of nine children, the eldest but fourteen years and the youngest but four months, his family will feel his loss most deeply. Some day we'll understand. No human excuse or argument could satisfy you or me of the reason for his removal. 'Some day!' It is better that we should not know now.

"It is left for us to pay our tribute to his memory. He was a good citizen, an excellent physician, a conscientious, noble father and husband. He lived and struggled and did everything in his power to bring his family up in the right way. The sorrow of the family, and especially the mother, are beyond realization.

"He was honest to himself, he was honest to his children and family, he was honest to his brother practitioners, to his patients and to his God. In the words of Shakespeare:

"His words were bonds,
His oaths were oracles;
His love sincere,
His thoughts immaculate,
His tears pure messengers sent from his heart.
His heart as far from fraud as heaven from earth."

Dr. HERMAN BENDELL said:

To be silent at such a time is to be most eloquent. Yet my acquaintance with Dr. Montmarquet as a member of the staff of the hospital with which we were both connected, prompts me to confirm all that has been said regarding him. I wish every physician could be as conscientious, as loyal to his patients and colleagues as Dr. Montmarquet. No words are too good to be said in eulogy of him. Those who knew him best will miss him most. When Dr. Mitchell told me of his death it sent a pang of sorrow through my heart. Only a few days before, we sat together in the hospital chatting over our experiences. I am glad to have the privilege of expressing my esteem for him as a friend, and to honor him as a physician.

Dr. A. VANDER VEER said:

The solemnity of the occasion impresses us all. We cannot forget that Dr. Montmarquet was standing just there before us a few weeks ago, giving his address as Vice-President. This address showed practically some of the results and conclusions of his professional work. Knowing that he was a busy man, we feel that he may have taken time for the preparation of that address which was needed for rest. We know that he did his work well. Practical acquaintance with him in consultation work in my office has shown me that. He was honest, modest and thorough. He was always ready to criticise himself if he thought he needed criticism, but was slow to take the credit to himself that he deserved. He was a physician who took his patients with him and thought of them whatever he was doing. It is some comfort to us to know that he received some comfort from association with his family, with his children. Dr. Mitchell has given us a just estimate of his worth. He was, indeed, a good official and a most excellent and honest practitioner.

Dr. WARD said:

I had no intimate acquaintance with Dr. Montmarquet, but my impressions from what I have seen of him in his work among us this fall have been most favorable. I have come to believe thoroughly in his sincerity, honesty, earnestness and ability.

Dr. CURTIS said:

I knew something of Dr. Montmarquet's life, occasionally meeting him in various relations. He was a loyal member of our profession, good-hearted, and very good company. His death is a very great loss to us.

Dr. WARD moved that Dr. Montmarquet's portrait be secured and that it be inserted with Dr. Archambault's biographical sketch in the ALBANY MEDICAL ANNALS.

On motion of Dr. WARD the Society adjourned.

ARTHUR T. LAIRD, *Secretary*.

GEO. GUSTAVE LEMPE, *President*.

A regular meeting of the Society was held January 9, 1907, in Alumni Hall of the Albany Medical College. About forty-five members were present, besides students from the Albany Medical College.

The following papers were presented:

"The Evanescence of Physical Signs in Heart Disease," Prof. HENRY L. ELSNER, M. D. (by invitation), Syracuse University, N. Y. This was followed by an interesting discussion in which a number of the members participated. Other papers presented and discussed were: "Electro-Therapy from a Physiological Standpoint," E. A. BARTLETT, M. D.; "Report of Three Months' Surgical Service at the Albany Hospital," E. A. VANDER VEER, M. D.

An instructive series of Pathological Eye-Specimens was demonstrated by ARTHUR J. BEDELL, M. D.

A lunch was served in the Faculty Room of the College after the meeting.

On Wednesday evening, February 13th, 1907, the following papers, as approved by the Comitia Minora, will be presented to the Society: "Surgical Intervention in Chronic Diseases of the Stomach (non-malignant), with Illustrative Cases," WILLIS G. MACDONALD, M. D.; "The Use of Cocaine in Major Operations," GEORGE E. BEILBY, M. D.; "Conditions Resulting from Injuries to the Pelvic Floor and their Prophylaxis," JOHN A. SAMPSON, M. D.; "Exhibition of Pathological Conditions from an X-Ray Standpoint," ARTHUR F. HOLDING, M. D.

Medical News

Edited by Arthur J. Bedell, M. D.

THE ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR NOVEMBER, 1906. Number of new cases, 103; *classified as follows*: Dispensary cases receiving home treatment, 5; district cases reported by health physicians, 13; charity cases reported by other physicians, 38; moderate income patients (1 emergency), 47; old cases still under treatment, 54; total number patients under nursing care during month, 157. *Classification of diseases* (new cases): Medical, 38; surgical, 9; gynaecological, 2; obstetrical, mothers 23, infants 23, 46; dental, 2; contagious diseases in medical list, 10; removed to hospitals, 4; died, 13.

Special Obstetrical Department.—Number of physicians in charge of cases, 2; attending physicians, 2; medical students in attendance, 2; Guild nurses, 2; patients, mothers 2, infants 2, 4; visits by attending physicians, 2; visits by students, 16; visits by Guild nurses, 24; total visits in this department, 40.

Visits of Guild Nurses (all departments): Clinics, 1; number of visits with nursing care, 1,269; for professional supervision of convalescents, 188; total number of visits, 1,457. Six graduate nurses and four assistant nurses on duty. Cases reported to Guild by three of the health physicians, forty other physicians, three dentists and the Humane Society.

STATISTICS FOR THE MONTH OF DECEMBER, 1906.—Number of new cases 135, classified as follows: Dispensary patients receiving home care, 1; district cases reported by health physicians, 11; charity cases reported by other physicians, 65; patients of limited means, 58; old cases still under treatment, 64; total number of patients under nursing care during the month, 199.

Classification of diseases (new cases): Medical, 47; surgical, 7; gynæcological, 10; obstetrical work of the Guild, 35 mothers and 33 infants under professional care; eye and ear, 2; number of contagious diseases in medical list, 3; transferred to hospitals, 6; deaths, 7.

Special Obstetrical Department.—Number of obstetricians in charge of cases, 1; medical students in attendance, 2; Guild nurses, 4; patients, 2; visits by head obstetricians, 7; by medical students, 11; by the Guild nurses, 22; total number of visits for this department, 40; (All departments) Visits of Guild nurses: Number of visits with nursing treatment, 1,342; for professional supervision of convalescents, 255; total number of visits, 1,597. Six graduate nurses and five assistant nurses were on duty. Cases were reported by three of the health physicians and by thirty-nine other physicians.

NEW YORK ALUMNI ASSOCIATION.—The Twelfth Annual Dinner of the Greater New York Alumni Association of the Albany Medical College, was held at the Marlborough Hotel, New York City, on Thursday, January 24, 1907.

This dinner proved to be one of the most interesting of the several the association has held. There were present a number of the old graduates and it was a very successful gathering of the representative alumni located in and about New York City. Among the number present were Dr. William H. Thompson, 1859; George F. Morris, 1878; Thomas H. Willard, 1883; Maurice J. Lewi, 1877, of New York; H. L. Cookingham, 1871, Red Hook, N. Y.; Thomas D. Crothers, Hartford, Ct., 1865.

The first toast on the list, "The Albany Medical College," was responded to by Dr. Albert Vander Veer. He referred in a most earnest manner to the improvements made in the past year in the college building and advances in methods of instruction. "Union University," by A. V. V. Raymond, Chancellor of the University. Dr. Raymond spoke earnestly about university affiliation, laying particular stress upon the hope of seeing the different departments brought into closer relation with each other.

"The Expert Medical Witness," was responded to by Mr. J. M. Osborne, formerly Assistant District Attorney of New York, who gave a most interesting address upon this subject. His tribute to the medical witness was very impressive, and he related a number of exceedingly interesting medico-legal cases. He stated very frankly he had never come in contact with any class of witnesses who adhered more closely to the truth in their testimony than does the medical man. The hypothetical questions are difficult to handle. The attorney for the plaintiff would pick out from the testimony the points that suited him and the doctor must answer yes or no. The same in regard to the attorney for the defendant, when the doctor would be obliged to answer the same way until all the facts finally reached

the judge and jury and they were able to gather from the medical testimony the true statements pertaining to the case. Mr. Osborne, also spoke of the fact that criminals gathered much as to the use of drugs and methods of destroying their victims, from the expert testimony given by members of the medical profession, putting these facts into criminal practice. Mr. Osborne gave a most delightful and instructive address, and it was fully appreciated by his hearers.

"As Ithers See Us," was responded to in a most delightfully humorous manner by Dr. Wisner R. Townsend, Secretary of the State Medical Society. He kept his audience in a constant frame of laughter, and said very many pleasant things about the graduates of the Albany Medical College, whom he had met in an official manner, in connection with the State Society.

"The Cause that Makes Nations," was responded to in a most masterly way and in a manner that received the closest attention, by Dr. Howard J. Rogers, of the State Education Department.

"A Voice From the Far West," was responded to by Professor Lewis Balch, M. D., formerly a member of the faculty, who gave an exceedingly interesting account of his experiences as surgeon-charge of our affairs in the Philippines, paying a very beautiful tribute to the graduates of our college whom he had met there, and in various other ways speaking of the progress and success the college was meeting with.

"The Faculty of Our Alma Mater," received just recognition in the remarks made by Dr. Arthur G. Root, who was most forceful in referring to the coming legislation on medical affairs. He said that he would need the loyal assistance of every son of the Albany Medical College in advancing the interests of the State at the present time.

"The Medical Society of the State of New York," was responded to by Dr. Joseph D. Bryant, President of the Society, whose oratory was most impressive, and his tribute to the graduates of the college very sincere. He gave a very clear, interesting description of the unification of the profession in this State and the excellent work that had been accomplished by some of the graduates of the Albany Medical College. Dr. Bryant is a most dignified speaker and he was never in better trim. Seldom has any gathering of the graduates of the college had a more delightful evening, and the speeches were of the very best.

Dr. Maurice J. Lewi, as toast master, presided in a most dignified and charming manner, and had much to encourage him in having present such a lot of representative men. Dr. Lewi is to be congratulated upon the success of his administration.

The following officers were elected for the ensuing year: President, Dr. Walter C. Gilday, 1894; Vice-President, Dr. Frederick W. Loughran, 1890; Secretary, Dr. Flavius Packer, 1893; Treasurer, Dr. George F. Morris, 1878; Board of Governors, Dr. Charles Gartner, 1895; Dr. Frederick W. Cordes, 1895, and Dr. Arthur J. Capron, 1894.

THE SCHOHARIE COUNTY MEDICAL SOCIETY held its annual meeting on December 19, 1906, at Cobleskill, N. Y., electing the following officers: Dr. L. O. White, Sharon Springs, N. Y., president; Dr. J. J. Miller, Cobleskill, N. Y., secretary; Dr. Leroy Becker, Cobleskill, N. Y., treasurer.

NEW YORK STATE LIBRARY, MEDICAL DEPARTMENT.—If a physician wishes to use the material in the Medical Library, he may fill out a comprehensive form and forward it to the Medical Librarian. The desired material will then be found ready for use at the time indicated.

Realizing that physicians, particularly those residing at a distance, can not always look up subjects for themselves, the Medical Librarian will gladly furnish a list of the best articles and books on any desired subject. The books will be collected for use in the library or will be sent on condition that the borrower pays express charges both ways. It is hoped that this may be a means of saving the physician's time and of helping to place the resources of the library more fully at his disposal.

A MANUAL FOR BOARDS OF HEALTH AND HEALTH OFFICERS.—A short, compact guide to follow in the discharge of their duties. It defines the State Board of Health, its powers and duties, rules and regulations; local boards of health, how constructed, powers and duties; directs the health officers; explains the relations of doctors, clergymen, magistrates and others to local boards; defines a nuisance, what constitutes, and modes of procedure to abate; sanitary regulations; certificates of births, marriages, deaths, etc. Written by Lewis Balch, M. D. Published By Banks & Co., Albany, N. Y.

OKLAHOMA MEDICAL NEWS JOURNAL.—*The Oklahoma Medical News Journal*, beginning with the January, 1907, issue, will have a new editor, Y. E. Colville, B. S., M. D., of Chattanooga, Tenn. Dr. Colville has bought a half interest in the *Journal* and will devote his entire time to the editorial department, while Dr. Phelan will be the business manager. In this way the *Journal* will be greatly benefited and enlarged, and will be more valuable to the profession than heretofore.

YALE UNIVERSITY MEDICAL DEPARTMENT.—The requirements for admission to Yale University after September, 1909, require that the minimum entrance qualification be two years of collegiate grade and that the preparation must include Inorganic Chemistry, Physics, and General Biology. Candidates who have received the degree of Arts or Science of some approved university or college will be admitted on presenting their diplomas or other satisfactory testimonials. Other candidates must present evidence that they have complied with the requirements for entrance at some collegiate institution of good standing or have passed equivalent examinations before some recognized examination board.

THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS will be held in Washington, D. C., May 7th, 8th and 9th, 1907.

Tuesday, May 7th.—The Congress will be opened by the President. Subject to be considered:

“THE HISTORICAL DEVELOPMENT AND RELATIVE VALUE OF LABORATORY AND CLINICAL METHODS IN DIAGNOSIS.”

Papers will be read as follows:

“The Evolution of the Idea of Experiment in the Study of Medicine,” Dr. WM. OSLER, Oxford, England; “On Neurological and Psychiatric

Diagnosis," Dr. LEWELLS F. BARKER, Baltimore, Md.; "On Chemical and Biological Diagnosis," Dr. ALFRED STENGEL, Philadelphia, Pa.; "On Physical Diagnosis," Dr. RICHARD H. CABOT, Boston, Mass.; followed by a discussion by Prof. FRED'K MULLER, of Munich, Dr. GEORGE BLUMER, New Haven, and others.

8 P. M.—Address by the President of the Congress, REGINALD H. FITZ, M. D., LL.D.

To be followed by a reception.

Wednesday, May 8th, 3 P. M.—Subject to be considered:

"THE COMPARATIVE VALUE OF THE MEDICAL AND SURGICAL TREATMENT OF THE IMMEDIATE AND REMOTE RESULTS OF ULCER OF THE STOMACH."

Papers will be read as follows:

Dr. JOHN H. MUSSER, of Philadelphia, Pa., and Dr. CHAS. G. STOCKTON, of Buffalo, N. Y., on "The Indications for, the Methods of, and the Results to be Expected in the Medicinal Treatment." Dr. WILLIAM J. MAYO, of Rochester, Minn., on "Surgical Treatment of Acute Ulcers of the Stomach, Including Perforations and Hemorrhage;" and Dr. JOHN C. MUNRO, of Boston, Mass., on "Chronic Ulcers and the Indications for Surgical Treatment."

Followed by a discussion by Mr. B. G. A. MOYNIHAN, of Leeds, England; Dr. A. JACOBI, of New York, and others.

Thursday evening, May 9th, 8 P. M.—A smoker.

ASSOCIATION OF AMERICAN PHYSICIANS OF THERAPEUTICS.—Physicians who are interested in the study and legitimate practice of the physical (drugless) therapeutic methods, notably electro-therapy, photo-therapy, mechano-therapy, hydro-therapy, suggestion and dietetics are invited to join the American Physio-therapeutic Association. Address the Secretary: Dr. Otto Juettner, No. 8 West 9th street, Cincinnati, Ohio.

The officers for the ensuing year are: President, Dr. H. H. Roberts, Lexington, Ky.; secretary, Dr. Otto Juettner, Cincinnati, Ohio; treasurer, Dr. Geo. H. Grant, Richmond, Ind.; executive council: Drs. W. F. Klein, Lebanon, Pa.; Jas. Hanks, Brashear, Mo.; J. W. Unger, West Point, Miss.; C. S. Northen, Talladega, Ala.; R. W. Gibbes, Columbia, S. C.; S. J. Crumbine, Topeka, Kas.; A. L. Blesh, Guthrie, Okla.

ASSOCIATION OF MILITARY SURGEONS.—After six years of successful growth, the name of the official organ has been changed from the *Journal of the Association of Military Surgeons* to *Military Surgeons*.

TUBERCULOSIS EXHIBITS.—In New York State there have been held one exhibition this fall during the meeting at Syracuse, of the association composed of health officers of the State, and 14 exhibitions with an attendance of 94,000 persons, in the tenement-house sections of New York City, in addition to the first exhibition already mentioned. But aside from these signs of awakening, the people of this State remain for the most part unconcernedly sleeping, perhaps here and there tossing about a little at the gentle rapping of a local health board or a persistent citizens' organization,

or, as in New York City, fairly routed by the Health Department, whose energy and perseverance are the admiration of all who know it.

This attitude of indifference on the part of the public is remarkable, when it is realized that 14,000 persons are every year dying in this State of a disease now definitely known to be preventable. Fourteen thousand deaths, a money loss of \$30,000,000, the slow torturing suffering of this neglected army of sufferers, the sorrow to tens of thousands, the children left without protectors, the parents, husbands and wives made desolate, the thousands upon thousands infected because of ignorant carelessness, this, in brief, is the price paid for this public unconcern, for ignorance and short-sightedness.

There was formerly the same attitude toward the plague, typhus, and smallpox, diseases that then ravaged the civilized world and which now have been so far successfully warred against that they at present hardly figure in mortality statistics. Proper sanitary measures may accomplish much the same result with tuberculosis which now causes more deaths than any other disease. But before such measures may be formed or enforced, the public, whose will the laws embody, must first learn and believe that the thing is worth while. It must be widely known, for instance, that tuberculosis is caused by a living germ conveyed from man to man principally through spitting, that the disease is now known to be not hereditary, as for many years it was thought to be, that its cure rests as a basis upon fresh air and sufficient wholesome food, and that its prevention depends upon the proper care of the sputum of the consumptive and the prohibition of the methods of life and industry which weaken the resisting power of the human body to the ever-present infinitesimal tubercle bacillus. The true import of these things realized by the public and the century will see us released from the great scourge which now levies its fearful annual tribute upon the people of this State.

The year 1906 was notable in one respect not realized by many, though few of the great incidents of that year will have a larger bearing upon the future of this country and State. Through the agency of the tuberculosis exhibition, the appeal to the public conscience in many parts of the country to the enormity of the situation presented by tuberculosis bears promise of benefit for which future generations freed from this wasteful, preventable disease may yet rise up and forgive us of the present time of many of the sins writ large upon the records of these opening years of the new century. For the first time any considerable number of persons have had brought home to them in an understandable and vivid fashion what this disease of tuberculosis, or consumption, is; what it means to them and the race; and why they should give to the now rapidly forming organized movement for the prevention of tuberculosis their zealous support.

Starting with an exhibition held in New York City by the National Association for the Study and Prevention of Tuberculosis and the local committee, there have been held in New York City, and in other places as Boston, Philadelphia, Chicago, Milwaukee, 14 tuberculosis exhibitions, which have been visited by 300,000 persons. These exhibitions show in a popular way what has been known even to the medical profession for

only a few years, that tuberculosis is a communicable disease, that it is a curable disease, and best and most important of all, that it is a preventable disease. This is demonstrated by lectures, by photographs of sanatoria, hospitals and dispensaries for the treatment and cure of tuberculosis, by many models of tenement houses, sleeping shacks and "lean-to's," by diagrams and charts showing the prevalence of the disease in the population at large and especially in certain sections and in certain occupations, by pathological specimens of infected lungs and other organs of the body. The whole subject is presented in such a way as to carry conviction with it and to lead to a realization that effort to stamp out the disease is worth while.

DEATH OF DR. WM. K. OTIS.—At the regular meeting of the Second Section of the American Urological Association, held in New York on Wednesday, October 24, 1906, the President, Winfield Ayres, M. D., officially announced the death of the Vice-President of the Second Section, William K. Otis, and called for a report by the committee appointed for the purpose, to present a memorial on the Association's bereavement. In presenting the report, a member of the committee said:

"The ties of lifelong intimacy which bound most of us to Dr. Otis make his death a subject of grief to each individual. The usual set forms of preamble and resolutions, therefore, were deemed inadequate by your committee to express our sorrow. "Billy's" demise is, to the older members of the Association, as if a much-loved brother had gone from us. Your committee begs to submit:

"Wm. Kelley Otis' earthly career ended on September 22, 1906. To the members of the American Urological Association his death is a three-fold blow. Most of us knew him intimately from his childhood; by his decease we lose a consistent friend, a charming companion, a most estimable colleague. To the science of Urology his death means an irreparable loss. Cut off in the midst of his career, his inventive genius is stopped; the new and useful instruments he was continually devising must now be perfected by other hands. The advances in our work, he can no longer aid in developing. The American Urological Association loses one of its founders, one of its most active coadjutors, one of its truest adherents. Our Association shares with the family, with the profession at large, and with that world in which true manhood is understood and appreciated, that deep grief which the death of so noble a character inspires."

L. W. Bremerman, A. M., M. D., of New York City, has been appointed Professor of Genito-Urinary Diseases in the New York School of Clinical Medicine, to fill vacancy caused by the death of Professor William K. Otis, M. D.

THE LATE DR. MARY PUTNAM JACOBI.—A memorial meeting was held to the memory of the late Dr. Mary Putnam Jacobi, of the Woman's Medical College of New York City, on Friday evening, January 4th, at the Academy of Medicine. Addresses were made by Dr. Wm. Osler, Dr. Elizabeth Cushion, Prof. Felix Adler, Mrs. Florence Kelley, Dr. Chas. L. Dana, Mr. Richard Watson Gilder and Dr. Annie L. Daniel.

PERSONALS—Dr. JOHN I. VINCENT (A. M. C., 1888) is in practice at Everett, Wash. He is Secretary of the Snohomish Medical Society.

—Dr. JAMES M. BOODY (A. M. C., 1903) is in practice at No. 321 West 22d street, Little Rock, Arkansas.

—Dr. H. D. FULLER (A. M. C., 1879) has moved from Seymour, Wis., to Berlin, Wis.

—Dr. GEORGE M. CASEY (A. M. C., 1905) has started practice in Red Hook, N. Y.

MARRIED.—FILKINS-DEWAR.—Dr. Silas Lorenzo Filkins (A. M. C., 1904) and Miss Annie Jean Dewar were married Tuesday evening, December 11, 1906. They will reside at Oak Hill, N. Y., where Dr. Filkins has a growing practice.

—SCHUYLER-VANVALKENBURG.—Dr. Arthur H. Schuyler (A. M. C., 1905) and Miss Clara Van Valkenburg, of North Chatham, were married December 27, 1906. Dr. and Mrs. Schuyler will reside in Rochester, N. Y., where the doctor has recently located.

—MURPHY-YEO.—Dr. Dennis A. Murphy (A. M. C., 1904) and Miss Catherine Yeo, of Gloversville, N. Y., were married, December 18, 1906. Dr. and Mrs. Murphy will reside in Gloversville, where the doctor is already well established.

In Memoriam

CHARLES GILES BACON, M. D.

On Saturday evening, August 18th, 1906, Dr. Charles G. Bacon, who had been confined to his bed for ten days, passed away, at his home in Fulton, N. Y., at the age of 92 years.

An appreciative sketch of Dr. Bacon's life and work was printed in the *Fulton Patriot* of August 22, 1906, to which the *ANNALS* is indebted for the following facts and for the accompanying portrait.

Dr. Bacon was born in Trenton, Oneida county, October 20, 1814. His father was Heman Bacon, while his grandfather was of New England birth, and lost his right arm through an injury received in his right hand at the battle of Bunker Hill in the war of the American Revolution. Dr. Bacon's father and family, consisting of the husband, wife and baby, in 1815 removed to the (then) far west, in Steuben county, where they resided seven years. Owing to the malarial diseases of that region, they returned in 1822 to Remsen, Oneida county, where in company with his father and two brothers, the work of clearing off the original forest, for farming lands, was commenced.

In later years, young Bacon improved the advantages of the district schools, together with instruction from his father, who was a scholar in those days. At the age of fifteen years, the young man purchased his time from his father, working for low wages on farms in the summer and spending his winters in the best schools within his reach, doing chores for his board, to make his funds go as far as possible. He afterwards took up the work of teaching district schools and was employed in some of the best schools in Ontario and Onondaga counties. He was also a student in the Russia Academy, Herkimer county, Steuben Academy and Syracuse High school.

At the age of twenty-three years he gave his entire time to the study of medicine and surgery. In 1840 he attended the Albany Medical College and the following year received a license from the State Medical Society to practice medicine and surgery. After a few months in the office of Drs. Clary and Smith, of Syracuse, he went to Fulton and began the practice of his profession. From 1841 until a few years ago, he was one of the most prominent members of the profession in that city.

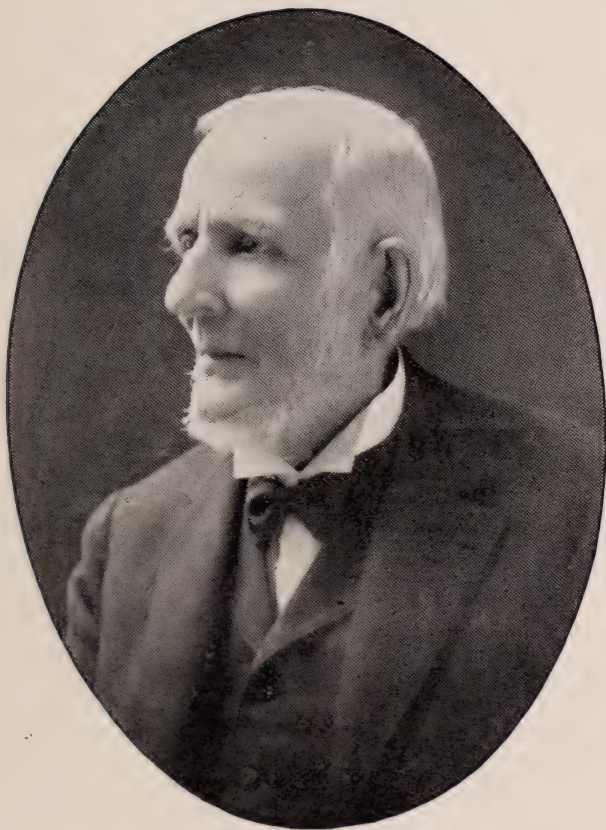
In 1842, Gov. Wm. H. Seward appointed him hospital surgeon, with the rank of major, in the Forty-third Brigade of Infantry in this State. In 1850 he attended the University and College of Physicians and Surgeons of New York. In 1858 he was elected a permanent member of the State Medical Society as delegate from the Society in Fulton county, and acted as President of the latter Society in 1859. In 1855 he became a member of the American Medical Association; in 1861 he received the State Regents' degree of M. D., and in 1874 he received the degree of M. D. from the Medical Department of Union University at Albany.

On May 18, 1843, he married Miss Mary M. Whitaker, of Fulton, and the union was blessed with two sons, Charles J. Bacon, now one of the leading physicians of Fulton, and Francis E. Bacon, for several years a merchant in Fulton, and now one of the leading merchants of Syracuse, and for several years President of the Syracuse Chamber of Commerce, and one daughter. Mrs. Bacon died in 1900, and since that time Dr. Bacon has resided with his son at the old family residence, 217 Oneida street, Fulton.

Dr. Bacon in early life became a member of the First M. E. Church Society of Fulton, and was always one of its most liberal supporters and active, consistent workers. He took an active interest in current events and public affairs, and was a town school commissioner in early days, and for twenty years was a trustee of the Falley Seminary.

Dr. Bacon was a ripe scholar, one who kept in touch with the strides of his life-long profession, although not in late years in active practice. He was a careful reader of the newspapers, and had well-defined ideas on all matters of importance to the public. He was a pleasant conversationalist, and took great pleasure in imparting valuable information to others from his treasure acquired by years of reading, and retentive mental faculties.

As a token of respect to the deceased, the business places of Fulton were closed during the hour of the funeral services.



Charles Giles Bacon, M. D.

Albany Medical Annals,
February, 1907.

E. HOWE DAVIS, M. D.

Dr. E. Howe Davis, the oldest practitioner in the city of Elmira, died suddenly at his home on November 3, 1906, at the advanced age of eighty-eight years.

Dr. Davis was born August 24, 1818, in Otsego county. His father was the Rev. Jesse Davis, who died in Otsego in 1843, at the age of 78 years. The son was educated in the district schools and at the Ames Academy in Montgomery county. After leaving school he read law, but abandoned it to take up the study of medicine, graduating from the Albany Medical College in 1854. He began his early practice in the town of Catherine, then in Chemung county, but now a part of Schuyler. After eight years' residence there he moved to Horseheads and after several years went to Elmira, remaining there until 1868. He then moved to Albany, where he remained twenty years, returning to Elmira in 1888. He was a member of the Medical Societies of the counties of Chemung and Albany, and of the Albany Institute. He was Surgeon of the Two Hundred and Seventeenth Regiment, New York State Militia, under Governor Bouck, a Mason, Odd Fellow and M. E. C. H.

In 1841, Dr. Davis married Maria H. Bennett, of Montgomery county, now deceased. There survives one son, Manfred H. Davis, and a daughter, S. Catherine Davis.

The doctor continued in active practice up to the time of his death. His was a remarkable constitution.

JOSEPH DIDIER MONTMARQUET, M. D.

Dr. Joseph Didier Montmarquet, one of the most popular physicians of Cohoes, died at his home from typhoid fever, December 15th, after an illness of four weeks, aged 46. A Canadian by origin, he was born in Jersey City, April 22d, 1860, the only child of Joseph Montmarquet, a man of considerable literary attainments and editor for a number of years of a French newspaper at Lewiston, Maine.

Dr. Montmarquet received his early education at Keeseville Academy and his classical education at L'Assomption College, Province of Quebec, after which he entered Yale College. From Yale he passed to the College of Physicians and Surgeons of the City of New York, from which he graduated June 13th, 1889. After graduation he located in Jersey City, remaining there but a short time, for, in August of the same year, he took up his residence in Cohoes, where he ever since lived, actively engaged in the practice of his profession. From the first his skill and ability were marked, and he soon numbered among the successful practitioners of the city. On January 18th, 1891, he was united in marriage to Miss Wilhelmina Zecher of Jersey City, who survives, together with nine children.

Dr. Montmarquet took deep interest in the foundation of the Cohoes City Hospital. Appointed a member of its medical staff, he served as surgeon from its organization to the time of his death, he was also lecturer in obstetrical technique at the Training School for Nurses con-

nected with the hospital. He was a valued member of the Board of Health, and at one time held for a year the office of coroner's physician. He was identified as an active member in several fraternal societies, notably, the Knights of Columbus. He was a consistent member of St. Joseph's Church, from which church the funeral took place December 18th.

A member of the American Medical Association, Medical Society of the State of New York and Albany County Medical Society, he had been received in the latter society in 1901, and was its Vice-President at the time of his death. At the semi-annual meeting of the Society, held October last, he delivered the Vice-President's address, having chosen for his subject, "Hysteropexy, followed by repeated pregnancies"—an address short and to the point, which elicited favorable comment.

In respect to his memory and as a mark of deep sympathy to his bereaved wife and little family, the County Society was represented at the funeral by its President, Dr. Gustave Lempe, and a delegation consisting of Drs. Edgar Vander Veer, A. T. Laird and G. E. Beilby. The local profession was present in a body. Brother physicians, among his most personal friends, including Dr. August Pfenning, of Hoboken, a classmate of the deceased, acted as bearers. From the church, accompanied by the immediate relatives and a few intimate friends, the remains were taken to the burial-ground and there laid at rest *donec veniat immutatio*.

J. L. ARCHAMBAULT.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS

The Diseases of Infancy and Childhood. By L. EMMETT HOLT, M. D., Sc. D., LL. D. Third edition. D. Appleton and Co., 1906.

It is hardly necessary to write an extended review of this well-known work. The fact that it has gone through three editions in ten years is an index of its popularity, and in this instance the popularity is well deserved. The new edition does not differ greatly from the preceding ones as to size, nor are there any marked changes in arrangement. The sections treating of the examination of sick children, diphtheria, and diarrheal diseases have been enlarged, and new sections have been added on some of the rarer diseases which have come into prominence in the past few years. The work, as before, is not merely a compilation of the observations of others, but is based upon the author's own wide experience. We miss reference to a few of the rarer conditions such as Progeria, Infantilism, and Still's disease. Occasional errors have crept in, as for example, the statement that the gland changes in Hodgkin's disease are simple hyperplasia. We are surprised to find no reference to operative treatment in congenital dilatation of the colon, and in the paralyses following anterior poliomyelitis. The book is, in the main, very satisfactory both as to text and illustrations, though the colored plates are not especially good. We know of no better one-volume work on pediatrics in the English language.

G. B.



Joseph Didier Montmarquet, M. D.

*Albany Medical Annals,
February, 1907.*

The Technic of Operations upon the Intestines and Stomach. By ALFRED H. GOULD, M. D., of Boston, Massachusetts. Octavo volume, containing 190 beautiful original illustrations, some of them in colors. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$5.00 net; Half Morocco, \$6.00 net.

This octavo volume of 302 pages, with 190 original illustrations, is devoted entirely to a study of gastric and intestinal surgery. The work is mainly a result of animal experimentation carried on by the author during a period of three years, with the object of simplifying where possible, the best gastro-intestinal operations. The author has thus developed many new features. The volume is divided into five chapters. Chapter one is a study of the repair of intestinal wounds and is a valuable introduction to a work of this sort, inasmuch as the success of gastro-intestinal surgery depends upon an accurate knowledge of the healing process. The various stages of repair are well illustrated by numerous low-power drawings. Chapter two deals with suture materials, needles, sutures, clamps, etc. In the third chapter are considered certain anatomical facts which have a direct bearing upon intestinal operations, namely, the blood and lymphatic supply of the intestine and intestinal localization.

In chapters four and five the operations upon the intestines and stomach are described. The descriptions are concise and the technic is presented very clearly by numerous practical illustrations. The operations described are mainly those which have found favor in the hands of the author and his associates. The book is attractively printed and the illustrations are well executed. It is a valuable contribution to the technic of gastro-intestinal surgery and is highly recommended.

G. E. B.

Chemistry: General Medical and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia. A Manual of Science and Chemistry and its Applications to Medicine and Pharmacy. By JOHN ATT-FIELD, F. R. S., M. A., Ph. D., F. C. S., etc., Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain, etc. New (19th) edition, specially revised by the Author to accord with the New U. S. Pharmacopœia, edited by LEONARD DOBBIN, Ph. D., F. I. C., etc., Lecturer on Chemistry in the University of Edinburgh, etc. 12mo, 760 pages, illustrated. Price: cloth, \$2.50 net. Lea Brothers & Co., Philadelphia and New York, 1906.

"At the First International Exhibition, held in Vienna in August, 1883," (to quote from the title page), "for this manual the Author was awarded a Gold Medal. At the Second, held at Prague in 1896, he received for the book the still higher, indeed the highest, prize of a Diploma of Honor."

This, the nineteenth edition, has been revised by Mr. Leonard Dobbin so that it conforms to the last edition of the United States Pharmacopœia. It is without doubt the most valuable book of its kind in print, for besides being a text-book, it is an authority and a standard work of reference valuable alike to the teacher, the student and the practitioner.

S. L. D.

Abdominal Operations. By G. A. MOYNIHAN, M. S. (London), F. R. C. S. Senior Assistant Surgeon at Leeds General Infirmary, England. Second Revised Edition, Greatly Enlarged. Octavo of 815 pages, with 305 original illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$7.00 net; half morocco, \$8.00 net.

The fact that a second edition of this work has appeared within a year is sufficient proof of its favorable acceptance by the profession. The general plan of the work has not been altered, but many valuable additions have been made to the text and to the illustrations, the work now comprising 815 pages and 305 illustrations.

The volume is divided into five sections. Section one comprises the the method of preparation of patient and operator, the complications of abdominal operations, abdominal incisions, the operations for peritonitis, subphrenic abscess and visceral prolapse. We find several new topics discussed in this section, notably the treatment of adhesions, and drainage after abdominal operations, the latter being mainly a summary of Yates' recent work.

Section two, which treats of the operations upon the stomach, was without doubt the most valuable section of the first edition because of the author's wide experience in this field of surgery. Its value in the present edition is further increased by the addition of several of the recently published procedures of Mayo and numerous summaries and analyses of the cases operated upon by the author.

In section three, which deals with the operations upon the intestine, we see but little change in the text. A fact worthy of note is the author's deliberate omission of any reference to any form of mechanical appliance for intestinal anastomosis. The purpose of these mechanical aids he believes has been served and their interest is now only historical. The operations described are those employed by the author.

Section four deals in an admirable way with the surgery of the liver and bile passages. The illustrations here are especially well executed.

In the last section there is an adequate consideration of the surgery of the pancreas and spleen.

With the addition of considerable clinical material in this volume and the revision of the work it is safe to predict that its popularity will be greatly enhanced. Its continued success seems assured.

GEORGE E. BEILBY.

International Clinics: A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine and Surgery. Vol. 3, Sixteenth Series, 1906. Published by J. B. Lippincott Co., Philadelphia. Price, \$2.00 net.

The following ideas are gleaned from a few of the many excellent articles which comprise the volume and are simply suggestive of the whole.

Prognosis and Treatment of the Chronic Valvular Diseases of the Heart, by DeLancey Rochester. This author states that the prognosis is

better in chronic valvular deformity if the cause be due to one of the acute infections, such as scarlatina or rheumatism, than to a chronic infection such as syphilis; as in the latter the poison is continuously active not only upon the valves but upon the myocardium and the entire circulatory apparatus.

The Prevention and Treatment of Acute Nephritis, by James M. French, advances the following ideas: The cause of acute nephritis is the irritant action of the toxins of the acute infectious diseases in their passage from the body through the kidneys. The kidneys should be relieved of the unnecessary duty of carrying off the poison that can and should be removed through the bowels. The excessive administration of liquid is harmful to the kidneys; unlimited quantities of water are no longer allowed to fever patients; perhaps we err too often in neglecting to determine the quantity that should be allowed in the individual cases. Our most effective means of combating acute nephritis are warmth, rest and restriction of diet.

The Treatment of Migraine, with special reference to the use of Cannabis Indica. De La Carriere, of Paris, gives full details as to his method of treatment under three heads, (a) diet, (b) systematic use of Cannabis Indica, (3) spray baths from the shoulders down.

The True Significance of Uric Acid, by Wm. Henry Porter, is a very exhaustive article; a partial summary informs us that the etiologic factors causing overproduction of uric acid are defective oxygen supply, overfeeding, and disturbances in the nervous mechanism. Uric acid is formed by oxidation reduction and not by synthesis. Fruit must be excluded from the dietary.

Infantile Derangements due to Improper Breast Feeding, is a very practical paper by Louis Fischer, and deals with the subject under the heads of underfeeding and overfeeding, with their symptoms, prognosis and treatment, together with their relations to rickets and marasmus.

Experimental Researches Bearing on Surgical Intervention in Nephritis, by Alberto Revighi, of Bologna, Italy. The author of this article upon original research work arrives at the conclusion that the improvement and recovery from the nephritic process after decortication is due to the modification of the blood circulation, to the better irrigation of the diseased organ with blood. The first effect is an increased flow of urine, a diminution of the stasis so deleterious to the life of the tissues and the restoration of their functions. The article further outlines the indications for the performance of kidney decortication.

H. D. C.

Uric Acid: The Chemistry, Physiology, and Pathology of Uric Acid and the Physiologically Important Purin Bodies, with a Discussion of the Metabolism in Gout. By FRANCIS H. MCCRUDDEN. The Fort Hill Press, Boston, Mass.

This book of 318 pages presents the complete literature of uric acid in all its ramifications into chemistry, physiology and pathology. In order to condense the mass of detail which the author unearthed in his search,

the book is necessarily made up of short and concise statements covering merely the main points of the articles reviewed. On this account the volume makes dry reading and can merely serve for reference or as the starting point from which to begin the study of the literature on any given topic. The author attempts no correlation of views nor expresses any individual opinion as to the relative merits of the work presented. To the uninformed, therefore, the pages present a mass of conflicting statements and diametrically opposing evidence, which leaves the reader in a maze of facts.

About one-quarter of the page-space is devoted to the names of the investigators, the titles of the papers, the name, number and page of the journals, with the year in parenthesis.

H. C. J.

The Medical Epitome Series. Pathology, General and Special. A Manual for Students and Practitioners. By JOHN STENHOUSE, M. A., B. Sc., Edin., M. B., Tor., and JOHN FERGUSON, M. A., M. D., Tor. Series Edited by VICTOR COX PEDERSON, A. M., M. D. Lea Brothers & Co., Philadelphia and New York, 1906.

The editor's preface states that the volumes of this series are intended to cover their respective subjects in all their essentials; and that the maximum amount of information in letter press and engravings be given for a minimum price.

To condense the subjects of general and special pathology into a small book of 285 pages is a difficult task and the work must of necessity consist largely of simply a series of definitions. The book is well printed; is illustrated with 16 engravings and a colored plate; and has a good index. Such a book is probably of use to those wishing to go over the subject of pathology very hurriedly.

J. M. B.

Diet in Health and Disease. By JULIUS FRIEDENWALD, M. D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore; and JOHN RUHRAH, M. D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. *Second Revised Edition.* Octavo of 728 pages. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$4.00 net; Half Morocco, \$5.00 net.

In reviewing the first edition of this work, about a year ago, we highly recommended this work as an aid to the busy general practitioner. In this edition the section on salts has been entirely rewritten, and the work of many well-known men has been taken up and commented on (Chittenden, Prochownick and Klemperer, etc.) and there has been added and revised lists of recipes and diet lists. The only just criticism that can be made of this work is that too much space is given to quotations from other authors.

S. L. D.

Rythmotherapy. A discussion of the physiological basis and therapeutic potency of Mechano-Vital Vibration, to which is added *A Dictionary of Diseases*, with suggestions as to the technic of Vibratory Therapeutics. With Illustrations. By SAMUEL S. WALLIAN, A. M., M. D., President of the American Medico-Pharmaceutical League, etc., etc., etc. Chicago: The Ouellette Press, 1906.

This little book is one of a type that is trying hard for recognition without any real basis of sound worth to go upon. It really seems too bad that the hard-working student should be called upon to consider seriously anything with such a ridiculous name as "rythmotherapy." No fairer way of reviewing this book can be found than to quote what the author himself says on the page following the title page. If, after reading what he says, the reader thinks it wise to buy and read the book, he can find fault with no one but himself.

"Rythm is the Underlying Law of the Universe.

"The 'Music of the Spheres' is as Real and Demonstrable as any Law of Mathematics.

"Life is an Incessant Succession of Rythmic Reiteration.

"Disease is the Opening of a Discordant Stop.

"Death is a Cessation of Vibrant Impulse. It shuts the Organ Manual.

"Fate is the Architect of the Organ.

"The 'Voice of Nature' is the Diapason of the Infinite.

"Music is Vibrant Harmony. It is Love struggling for a Language.

"Love is Music that has found a Language.

"Hate is the Clash of Antagonistic Vibrations."

SPENCER L. DAWES.

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Edited by Miss Ada Bunnell, B. L. S.

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Recent Accessions to the Library

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PERIODICALS

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SURGERY

Edited by A. Vander Veer, M. D., and Arthur W. Elting, M. D.

Renal Tuberculosis.

GEORGE WALKER. *The Johns Hopkins Hospital Reports*, xii, 455.

In this exhaustive article the author presents an analysis of 373 cases of renal tuberculosis and 84 cases of tuberculosis of the remaining genito-urinary organs which he has collected from the literature, together with a study of 79 cases of genito-urinary tuberculosis which have occurred in the wards of the Johns Hopkins Hospital and in his private practice.

The salient points are as follows:

Frequency of Kidney Tuberculosis.—In the autopsy records collected from various sources the author finds that of all cases examined post-

mortem the number showing kidney tuberculosis varies from three to six per cent. In cases dying of pulmonary or other forms of tuberculosis from 17 to 25 per cent. had tuberculosis of the kidney. In 1369 autopsies at the Johns Hopkins Hospital there were 61 cases (44 per cent.) of renal tuberculosis. In 482 cases which had manifested signs of pulmonary tuberculosis during life, 23 showed tuberculous lesions in one or both kidneys. In 266 cases where other tuberculous processes were found at autopsy, but in which there had been no manifestations during life, two renal lesions were noted. In 36 cases of miliary tuberculosis, one or both kidneys was affected in every instance.

Pathology.—The author in his examination of a large number of specimens extending over a period of four years, and from his study of experimental lesions in rabbits' kidneys, arrives at the conclusion that tubercle bacilli may gain access to the kidney by three distinct routes: *first* and most commonly through the blood-current, *second* more rarely by an extension into the kidney from surrounding organs, principally from tuberculous foci in the vertebræ, and *third* only in exceptional instances by an extension upward from the bladder. The opinion held by some authors that infection may take place through the lymphatic system the author believes is unwarranted, in as much as no lymphatic vessels going into the kidney have been demonstrated. The most common ports of entry for the bacilli are the respiratory and alimentary tracts. That they may thus enter the system without producing lesions in the mucous membrane the author has clearly demonstrated in experiments in animals fed on an emulsion containing tubercle bacilli and killed several hours later, the mucous membrane was found to be intact, but the neighboring lymphatic vessels showed tubercle bacilli and soon also the organisms appeared in the bronchial lymph glands. Once these bacilli have gained entrance into the blood, if arrested in their course, in organs where conditions are favorable a localized tuberculosis is produced and it is well established that this is the pathogenesis of most cases of renal tuberculosis. Researches have proven conclusively that in the majority of instances the tubercle bacilli are stopped first in the glomerulus and are propagated from this point. The bacilli may pass out through the glomerulus in three ways—(1) when fusion of the tuberculous area with the capsule occurs, a direct invasion is rendered possible, (2) they may pass into the small blood vessels at the base of the glomerulus, (3) they may pass into the cavity of the capsule and down the tubules where they lodge. As these early tuberculous processes, whether in the glomerulus or tubule become disseminated throughout the kidney, the organ shows a slight or occasionally a considerable increase in size. The non-invaded kidney structure not infrequently shows a definite diffuse nephritis.

Infection through the blood-current.—Gross appearances: Three forms of gross renal tuberculosis are distinguished, (1) Miliary tuberculosis, (2) Chronic tuberculosis with the ureter patent, (3) Chronic tuberculosis with the ureter blocked.

The miliary form is in no way a surgical condition. In the chronic nodular form where the ureter is patent the kidney may or may not be

enlarged. The process often advances, causing complete destruction of the kidney substance. The blocking of the ureter is brought about in two ways, either by a tuberculous process in the mucosa, or it may be plugged by a mass of tuberculous debris or a blood clot. In this form there may be a massive degeneration and destruction of the whole kidney, or a hydronephrosis may result, and here the increase in the size of the organ is very marked.

Ascending tuberculosis.—Extension of a tuberculous process from the bladder to the kidney the author asserts is now considered by surgeons and pathologists a very rare occurrence. Experimental procedures also speak against the ascending form. That it may occur however has been proven in certain instances. It probably always results either from an infiltration of the lower end of the ureter so that it fails to become closed in the normal manner or a definite obstruction in the urethra or at the vesicle neck by the prostate.

Infection of the kidney by extension from the surrounding organs.—Patoir, Monel, Hillingsworth, Tuffier and numerous other writers have reported cases in which the kidney was infected from an extensive tuberculous process in the vertebræ, the organ having become diseased by direct invasion. In this form there is first an erosion of the capsule with later an implication of the kidney substance. No alteration in volume and no change in the urine is observed until the process reaches the pelvis of the kidney. Proving that the kidney capsule is very resistant to this sort of infection, are the observations of the author, as well as those of Albaran, who have noted instances in which the perirenal tissue have become tuberculous without a break in the capsule.

Condition of the remaining genito-urinary tract, the renal tuberculosis being primary.—In the cases herein reported and collected in which a statement was given in regard to the other genitalia, tuberculosis of the bladder was found in 42 cases; of the seminal vesicles in 9; of the prostate in 15; of the testicles and epididymes together in 36; of the ureter in 40. Posner states that in 149 cases he found the bladder involved in 18, and the testes in 8.

Condition of the bladder.—Contrary to what one might expect, the bladder does not become infected early, the mucous membrane offering a very decided resistance to the invasion of the tubercle bacilli. Nevertheless, the symptoms belonging to irritation of the bladder, pain, tenesmus and frequent urination were present in over 90 per cent. of the kidney cases. In practically all cases on examination could be seen a red elevation of the mucous membrane around the urethral orifice on the affected side, and extending from this area downward to the neck of the bladder, redness and congestion of the entire mucous membrane. In occasional instances the entire mucosa of the bladder was found injected, and of a dull, grayish red color, the normal lustre being absent. This condition representing, not a diffuse tuberculosis of the bladder, but a cystitis the result of irritation of the tuberculous excreta. The tuberculous involvement was usually in the form of definite ulcers situated most frequently about the urethral orifice of the affected side.

The ureter.—The consensus of opinion is that primarily tuberculosis of

the ureter never occurs. In renal tuberculosis the ureter was found to be involved in from ten to twelve per cent. of the cases. It is most frequently implicated when the pelvis is diseased or in patients who have a secondary tuberculosis of the bladder.

The effects of pulmonary and general tuberculosis of the kidney.—The more recent writers on this subject, notably Coffin in 890, Daunic in 1893, Pissavy in 1898, Landouzy and Bernard practically all agree that a diffuse parenchymatous nephritis is the most frequent lesion found in the kidney in pulmonary or general tuberculosis and they believe that it comprises about 40.60 per cent. of all cases. The interstitial variety is uncommon, as is also an amyloid degeneration, at least according to the findings of the author.

Tubercle bacilli.—The bacilli appear in the urine very early in renal tuberculosis and are always present with the pus and debris. The frequently reported failure to find the specific organism the author believes to be due to inaccurate observation, for his experience has taught him that a thorough search will lead to their discovery in nearly every instance. His method of procedure is given in detail. When he was unable to thus demonstrate their presence guinea-pigs were inoculated. The inoculated animal should develop tuberculosis in from two to five weeks.

Smegma bacilli.—A source of grave error has been the frequent confusion of smegma bacilli with tubercle bacilli. The author, from other sources, has collected reports of a number of operations, which were performed for a tuberculosis of the kidney, the diagnosis having been made on the supposed presence of tubercle bacilli in the urine. At operation no tuberculosis was found. This error the author has found can usually be eliminated by obtaining with great care, a catheterized specimen. When this is impossible a reliable differential stain should be used, or as suggested by Trudeau, in all cases a guinea-pig should be inoculated.

Etiology.—Primary tuberculosis is rare. The process in the majority of instances is secondary to a tuberculosis process in some of the other organs, the most common sites of infection being the bronchial and lumbar glands. As predisposing factors the author mentions trauma, the presence of stone and acute inflammatory infections. Gonorrhea seems to bear no relation to the infection of the kidney with tuberculosis. No explanation can be offered as to why one kidney becomes involved and the other remains free.

Age.—The ages of the collected cases ranged from seven months to sixty-three years. The largest number in the decade, from 20 to 30 years. Average age was 27.60 years. In Hunner's series the average age was thirty-three and a half years.

Sex.—Out of 386 cases in which sex was stated 182 of the patients were males and 204 females.

Kidney affected.—In 216 cases in which the diseased kidney was specified, the right was affected 111 times and the left 96 times; both were implicated 9 times.

Condition of the other kidney.—From a close study of the histories of the reported cases the author is led to believe that where the disease is

primary in one kidney, in the majority of cases, over two years elapse before the other kidney will become involved. Autopsies have shown, that in those cases where there has been more or less general infection, some form of nephritis was present in the non-tuberculous kidney in about 73 per cent. of the cases. This is produced by the excretion of tuberculous toxins. A compensatory hypertrophy of the sound kidney is nearly always present.

Symptoms.—These are classified as local and general.

The local manifestations in the order of frequency are: Polyuria, with no abnormal constituents; the presence of abnormal constituents in the urine, pus, blood and debris, disturbances of the bladder, frequent and painful micturition; pain in the region of the kidney, dull, continuous, or very sharp or paroxysmal; hæmaturia; the development of a tumor mass.

The constitutional symptoms are: Fever, slight or absent at first, later irregular as in other tuberculous infections. After secondary invasion of kidney with other organisms the evening temperature reaches often 105.

Sweats.—Often occurring daily in early morning, or only two or three times a week.

Loss of flesh.—In the chronic form the loss of flesh is very gradual, in the more acute processes it is much more rapid.

Anaemia.—Usually marked. Leucocytosis after invasion of other organisms.

Vomiting.—Usually follows an acute paroxysm of pain and is also present in the late stages where there are profound digestive disturbances.

Uraemia.—Only present as a rule when both kidneys become implicated.

Diagnosis.—It is only in the earlier stages that the diagnosis is difficult, and likewise of the greatest importance. Here there may be present only one of the above enumerated local signs. Very frequently it is that of bladder irritation. This fact should be given emphasis.

The tuberculin test.—While resorted to frequently, is, the author states, not entirely without danger, for it undoubtedly produces definite changes in the epithelial cells of the kidney. The probability of other foci in the body renders the test of doubtful value.

Method of determining which kidney is affected.—While the subjective signs and palpation renders material aid, the most conclusive evidence is obtained by means of the cystoscope. Also when further proof is necessary the ureters should be catheterized. This latter procedure while objected to by a number of operators, mainly on the ground of possible infection, is in the opinion of the author, a safe and justifiable one if carried out under proper precautions. The various other methods of obtaining from the bladder the individual urines is considered impracticable and not without danger.

The functioning capacity of the other kidney.—Since autopsy records prove that the second kidney is diseased or inadequate in from 60 to 75 per cent. of the cases and that a single kidney is present in every 5,000 individuals it is vitally important to determine the presence and working capacity of a supposedly sound kidney when a nephrectomy is contemplated. For determining that two kidneys are present the cystoscope is

the most reliable agent. It should be borne in mind, however, that a source of error is encountered in malpositions and double ureters. The functioning capacity should be determined, first, as regards the permeability by the use of methylene blue, the secretory function by phloridzin, and the amount of work which the kidney is doing by cryoscope.

Prognosis.—In the experience of the author in the Pathological Laboratory of the Johns Hopkins Hospital and in a careful search of the literature he is unable to find a single authentic case in which renal tuberculosis has ever healed spontaneously. In a few instances after complete distinction of the kidney the disease has apparently become arrested. Such a favorable outcome however is rare. Death is caused, if the condition is untreated, in from a few months to several years. That the condition may exist in one kidney, for from one-half to two years, without producing lesions in the other kidney has been proven.

Treatment.—As systematic treatment has proven to have little if any effect on the progress of the disease, removal of the kidney is the only means of cure. The author discusses in detail the various phases of nephrectomy, collecting the statistics of numerous other writers and giving their operative and ultimate results and then presents the following table of his own collected cases: After 267 nephrectomies, 210 of the patients survived the operation and were living at last accounts; 38 died within the first three weeks and 19 at a later period. Of the 210, 79 were spoken of as well, 83 as recovered, 20 as cured, 4 as good results, 7 as improved, 2 as not improved; 15 as improved at first, but later as having showed unfavorable conditions; of these 15, 3 are weak and ill, 5 have a persistent cystitis, 2 involvement of the other kidney, 1 tuberculosis of the lungs, 1 general tuberculosis, 1 pain in the other kidney; of the other 3 no definite record is given.

Nephrectomy.—Has its value only as a palliative procedure or as a preliminary measure to nephrectomy in cases of large renal or perirenal abscess. The question *when to do a nephrectomy* and its contraindications are considered at length. In a general way it can be said that neither a slight pulmonary involvement nor tuberculosis of the remaining genito-urinary tract, provided the other kidney is uninvolved, are contraindications to nephrectomy.

Operative technic.—The mortality by the lumbar route is found to be less by 8 or 10 per cent. than by the abdominal. An incision is favored, which begins at the margin of the muscle about $\frac{3}{4}$ of an inch below the border of the rib and extended obliquely downward nearly parallel to the rib for a distance of 4 inches. Bearing in mind the possibility of forcing myriads of bacilli into the blood vessels and lymphatics during the manipulative procedures attending the delivery of the kidney, and thus producing a general infection, the author suggests a new procedure which consists in first ligating and cutting the vessels through an abdominal incision, then closing, and completing the removal by the lumbar route. The ureter if it presents evidence of tuberculosis is removed as low down as possible, otherwise it need not be excised.

The complete histories and operative notes of thirty-eight cases are appended.

GEORGE E. BEILBY.

ALBANY MEDICAL ANNALS

Original Communications

THE NEW ELLIS HOSPITAL, SCHENECTADY, N. Y.

By CHARLES G. McMULLEN, M. D.,

Attending Gynecologist to the Hospital.

Keeping pace with the marvelous strides in commercial and industrial lines Schenectady has made within the past few years, the New Ellis Hospital, an institution as complete, scientific and modern as any yet built, was opened to the public October 13.

The beginning of the hospital movement may be traced as far back as 1901, when plans were gotten out for the overhauling of the old hospital building on Jay street which had long been denounced as inadequate in size as well as equipment. At that time a new hospital was only a thing of dreams for the members of the Hospital Board, the financial status being at low ebb.

But there were a few members of the Board, headed by its president, Mr. J. W. Smitley, whose zeal was such that they determined that the dream should be realized. At the instigation of these few the rest of the Board became enthused and, aided by the local press, the work was begun. At first the interest smouldered and threatened at times to die out. Finally, in 1903, the New Hospital movement loomed up in full force and the papers teemed, editorially, with paragraphs ardently exciting the public to join in the movement.

That the old building was inadequate was evident. In Schenectady, the seat of the enormous plants of the General Electric and American Locomotive Companies, the number of accident cases requiring hospital treatment is uncommonly large and

necessitates a large number of wards—larger than the old building commanded. The point of inconvenience from noise and dust was discussed. Jay street, the site of the old hospital, is the Twenty-third street of Schenectady, and there was a great deal of noise from the constant bustle of trucks passing and repassing, which was especially disagreeable to nervous patients in the summer months when the windows were left open.

Theoretically, the people favored a new hospital, but whether they would go down into their pockets to assure it was a grave question. To set the ball a-rolling, several of the wealthy residents of the city gave handsome sums, which, added to the money secured from the sale of the old site, served as a nucleus for the building fund. The work progressed slowly, even slower than was anticipated, and it was not until 1904 that matters had developed sufficiently to warrant the getting out of plans. The new structure was started in May, 1905, and was hurried to completion without delay.

The new hospital is most admirably located. The building stands upon an eminence on the outskirts of the fashionable residential district and commands a superb view of the picturesque Mohawk, several miles of its winding course being included in the vista. It is easily accessible by street cars, and yet far enough away to insure undisturbed quiet, free from the objectionable rumble of cars or noise of any sort. The building stands in the center of a triangular plot of land comprising the hospital property, so that in case any buildings should spring up about that section in the future there will be plenty of breathing space about the hospital.

The exterior of the building presents a prim, modern appearance. It is built of Harvard brick, which is being used so extensively of late in up-to-date structures, and has Indiana limestone trimmings, which harmonize with the brick very tastefully. The main approach is in the administration building. Two smaller stairways parallel with the building meet to form the large stairway. The first floor throughout is of metal and concrete construction, the second of mill construction, and the third or operating floor of the administration building is mainly of expanded metal and concrete construction. The roofs are built of plank and slated.

The pavilions are separated from the administration building by heavy brick walls and provided on each story with fire doors.

All interior partitions are constructed and the outside walls are furred with fireproof material having an air space. All plastering is hard finished and the ceilings are plastered on metal lath.

The floors in the basement, with few exceptions, are finished in cement; the toilets, baths and operating rooms have tile floors, and the remainder throughout are finished in maple. The main operating room is wainscoted with white tile having a sanitary base and cap; all other operating rooms, toilets and baths have a sanitary tile base.

The stairs are of iron with slate treads.

All interior finished woodwork is plain and designed particularly for sanitation.

All electric wiring for lighting and power is run in iron-armored conduits.

The plumbing is strictly modern and the fixtures are the best used in hospital buildings.

The building is heated by direct and indirect steam; all wards, private rooms, operating rooms, toilets, baths and administration rooms are provided with a modern system of ventilation.

The administration building and the pavilions are equipped with fire-escapes.

The hall is entered through a vestibule and doors with plate-glass panels running nearly to the floor. An air of roominess without the suggestion of vacancy is predominant throughout the building.

The arrangement of the building is thoroughly up-to-date. The entire third or top floor of the main building is used for operative purposes. In the center directly over the main entrance is the main operating room. Its equipment is the best that money can buy. It is twenty-seven feet square. Natural light is admitted from a twenty-foot pointed skylight in the top and from windows in the front. From the room the view includes nearly the entire city, the Mohawk river and the hills beyond.

To the practiced eye of the surgeon the room, in detail, is a beauty. Everything in it is white except the steel and the glass. At the base of the skylight, following its structure, are 21 incandescent bulbs. At present a 500-candle power Nernst light stands directly over the large operating table in the center. This light is portable. It not only can be moved on its lever so that the rays can be reflected in all directions, but can be taken to other parts of the building.

Besides, the room contains two other tables, a portable stretcher, dressing tables, instrument tables, etc. All of this equipment, which cost \$3,000, is of white enameled iron and glass and can be easily sterilized. The floor, which is of white tile, meets a five-foot high white wainscoting on all sides of the wall and has a sanitary base.

The room is entered from the main third floor hall by double swinging doors near each end. To the north or to the right as one looks from the windows is another door. This leads directly into a private operating room about sixteen feet square. Its equipment is not as elaborate as the main operating room. In the center is the operating table, and all the necessities, such as dressing-tables and instrument holders. Here the 500-candle power light will also be used when needed, it having only to be rolled from the main room and connected.

To the left, immediately after passing into the hall from the private operating room is a slightly smaller room. This room is an etherizing room. Here the patient is taken prior to the operation and the anesthetic administered. This room is also used for surgical supplies.

A third fully-equipped operating room, for septic cases, is at the southeast corner of this floor. Adjoining it is a second anesthetizing room. There are also a retiring room and lavatory for nurses, the room containing the large sterilizers and the room in which are made and stored surgical dressings.

Following along closely accessible to these rooms is a lavatory where the instruments, etc., are washed up after an operation is completed. Here are appliances, all of the same white materials, including a case for instruments. There is also a small retiring room for the doctors, in close connection with their wash-up room, which is equipped with the predominant white furniture, and has a shower bath.

Throughout the building there are two lavatories on each floor, located directly over each other, from the basement up.

Passing down a staircase at the side of the elevator the second floor is reached. In the north end is situated the men's medical ward, which is a little over thirty feet square and contains, when not crowded, twelve beds. These beds are of white enameled iron in three pieces. At the foot of each bed is a white chair. On one side is a small stand and on the other a table with a standard from which the patient may eat.

To Illustrate Dr. McMullen's Article on
"The New Ellis Hospital."

Albany Medical Annals, March, 1907.



FRONT VIEW OF THE HOSPITAL.

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THE OPERATING ROOM

Two doors, one on each side of the ward, open into a sun parlor where convalescent patients may rest in wicker chairs.

Leaving the ward, immediately to the right, is a chart room for the nurses. This may also be used for a retiring room. To the left is a private room, a retiring room for the doctors, store-room and an opening into a chute into which soiled linen may be placed.

Near to the nurses' chart room on the right is a linen closet and a diet kitchen. Into the latter food served to special patients comes on a dumb-waiter from the kitchen. The room is equipped with a refrigerator, gas stove and china closet.

In the main building is the women's surgical ward. This ward has six beds, all of the same white iron material, with a stand and chair for each bed. To the east from this ward is a semi-private ward, with four beds, and a stand and chair for each bed.

On this floor there are ten private rooms, furnished the same, except that six have brass beds, instead of iron, and are considered better locations.

Each of the private rooms has an iron bed with springs, mattress, linen and two pillows, a wardrobe, bureau with two drawers and glass, chair, washstand, small stand, adjustable bedside table and screen.

Toward the south facing the west are the superintendent's quarters. There are two rooms, a sitting-room and bedroom. The sitting-room has an open fireplace, reclining chair and smaller chairs. This room is furnished with mission furniture. The bedroom has colonial furniture.

A little to the north of the superintendent's rooms is the internes' room. This room has three beds, one for each doctor, two bureaus, two chairs, two wardrobes, and is of the same furniture as the private rooms. All the floors of the second story are of hard wood. On this floor also is a room fitted up as a "den" for the internes.

Descending a staircase, of which there are three, the main floor is reached. At the end of the north wing is a large sun parlor, furnished with two wicker reclining chairs and wheel chairs. It opens directly off the men's surgical ward, which is the largest ward in the building.

There are fourteen beds, all of which, with the other appliances, are of white enameled iron. In each ward there are two screens.

The men's surgical ward is about forty by thirty-five feet. To

the south of the ward is a general dressing-room. This room contains dressing-tables, portable stretchers, irrigators, rubber tubing, etc.

Toward the south and the east of the surgical ward is a children's ward, where all but contagious cases will be treated. This ward contains six beds, with the regulation fittings.

Directly in front of the main entrance, as one enters the building, is the elevator. This is accessible on all floors, and is of large proportions. To the left of the entrance are the clerk's, the doctors' and the superintendent's offices. To the right is a visitors' reception-room.

In the south wing of this floor is an obstetrical room, with two beds and a delivery room adjoining. Closely adjoining this room is a private ward with five beds. On this floor there are eight private rooms and one large private room. These rooms are the best private rooms in the hospital, and furnished a little more elaborately. The flooring on the main floor is all of hard wood.

In the basement to the right of the elevator is the nurses' dining-room. This has six tables, each seating six nurses. Farther to the north is the officials' dining-room. This has a pantry attached. To the south are storerooms and some of the servants' quarters.

At the north end of the basement floor is the dispensary. On the east side is a waiting room for women patients, a dark room for treating eye and ear cases, and a storeroom. On the west side is the men's waiting-room, the dispensary operating room and wash room; also a drug room in which, from behind a counter, the man in charge of the drugs dispenses them for use in the building. In this part of the building there is also an X-ray room.

In the one-story east extension is first located the kitchen. This is fitted up with bakers' ranges, etc. In the rear of this is the laundry, which is fitted with washtubs, dryers, etc. Opening just off the laundry is a large steam sterilizer, fourteen by three feet in dimensions. There is also a crematory for the disposal of soiled dressings, etc., and the boilers are also situated in this extension.

Close to the kitchen on the north is a cold-storage room. Passing through the main hall into the open, the morgue is reached at the remote east end.

To the east and south of the hospital is the ambulance building of brick. There are two ambulances, and drivers and horses ready for any call.

The equipment of the hospital embodies a number of novel features, including telephones in all parts of the buildings connecting with each other and with "Central" by means of an automatic switchboard. This hospital also maintains a pathological and bacteriological laboratory. Another unique feature is the steel furniture, enameled white, with which all rooms are furnished entirely, beds, chairs, dressers and all.

Taking all in all the New Ellis Hospital is an institution which does Schenectady credit and of which the city may well be proud.

The brunt of the work and responsibility of giving this modern hospital to Schenectady has fallen upon the president of the Board of Managers, Joseph W. Smitley. He has rendered yeoman service. While others have done much, he has done the most, giving freely of his time, energy and money.

THE WHITMORE HOME FOR NURSES.

Erecting it as a monument to the memory of his mother, Joseph W. Smitley, president of the Board of Managers of the Ellis Hospital, has caused to be built, at his own expense, the beautiful Whitmore Home for Nurses, which stands in close proximity to the handsome New Ellis Hospital. The expense of furnishing this home for nurses has been borne by John H. Smitley of Pittsburg, Pa., a brother of Joseph W. Smitley, and it is understood that the latter will eventually provide a permanent maintenance fund for the institution.

Keziah Whitmore Smitley, mother of the two gentlemen mentioned, and in whose memory the home has been constructed and furnished, was born at New Salem, near Pittsburg, Pa., on February 15, 1814; was married there on March 22, 1832, to John Smitley. Four years later, in 1836, they located in Pittsburg. Mrs. Smitley died at Pittsburg on November 14, 1893.

Within the past five years her son, Joseph W. Smitley, has been considering the matter of erecting a monument to her memory in the cemetery at Pittsburg, where his mother is buried. When the plans for the New Ellis Hospital had been accepted, no provision was made for the accommodation of the nurses. It was then that the thought came to Mr. Smitley to have the monument take the shape of a memorial home for nurses. His offer

to the Board of Managers of the hospital to carry out this idea was accepted, the building to be named "The Whitmore Home."

When the home was completed in August of this year, John H. Smitley of Pittsburg, another son, very kindly agreed to furnish the building. This he has done, and the home has been occupied for the past few months by the young women for whose comfort and convenience it was built. Exclusive of land, the Whitmore Home and its furnishings have cost over \$15,000.

THE PRESENT STATUS OF BIER'S METHOD OF TREATMENT BY CONGESTIVE HYPEREMIA.

Read at the January (1907) Meeting of the Medical Association of Troy and Vicinity.

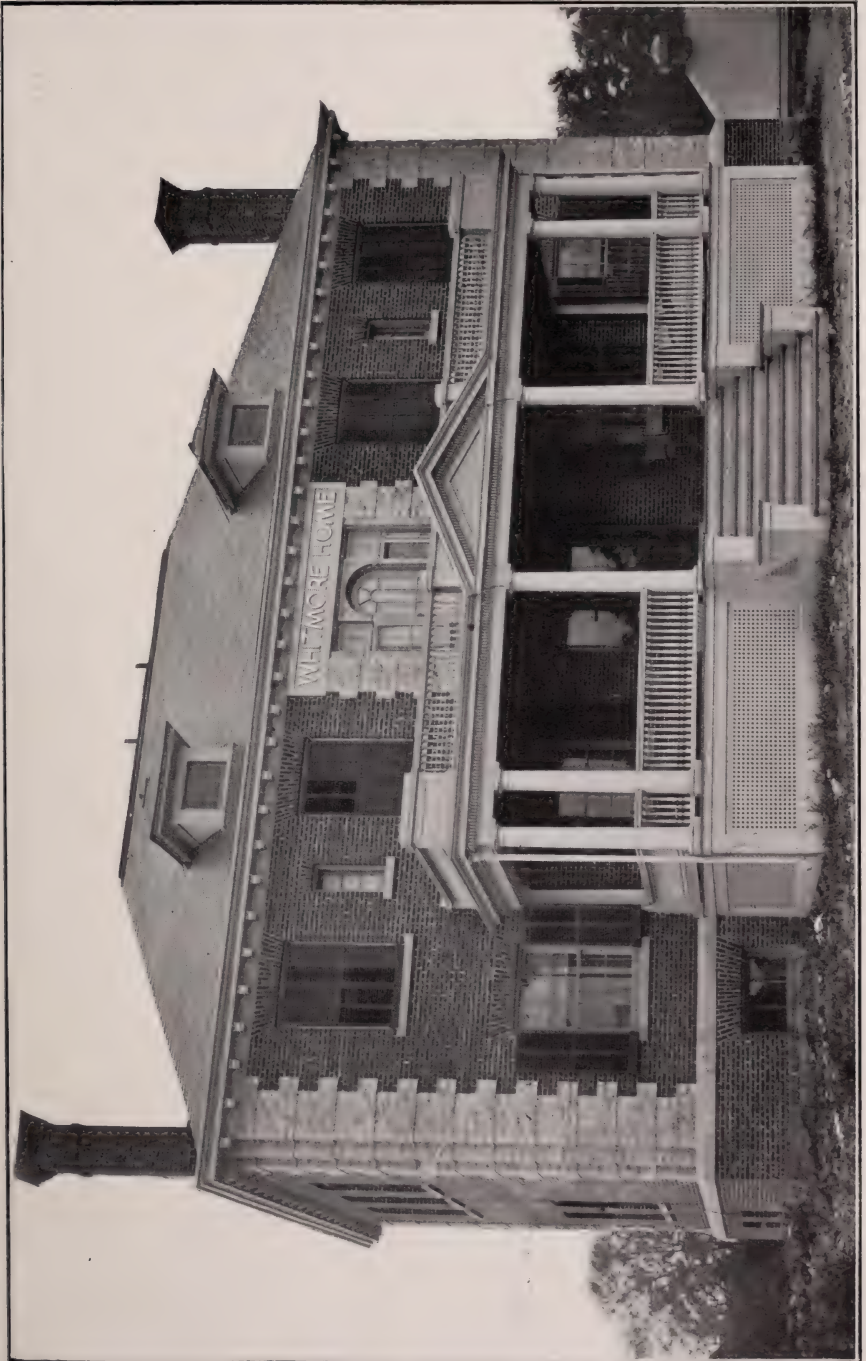
By J. M. BERRY, M. D.,
Troy, N. Y.

A recent editorial in the *Journal of the American Medical Association* on the subject of Bier's method of treatment called attention to the two-fold tendency in modern therapeutics. First, an effort to replace some of the older substances by less toxic products of chemical synthesis, and second, to utilize *physical* therapeutics. The advances in therapeutics are achieved by two distinct methods of procedure. On the one hand, in recent years much of the advance in therapeutics has come from the laboratory where, by careful theorizing, experimentation and trial, new principles of treatment have been perfected. As examples of this there are the treatment of diphtheria by anti-toxin and Wright's method of treating infections by bacterial vaccination. On the other hand, brilliant therapeutic discoveries have been made by a second method, viz., by clinical observation, noteworthy examples of which are to be found in the treatment of malaria by quinine and the treatment of smallpox by vaccination. To this latter method belongs Bier's treatment by congestive hyperemia, a procedure which, in the terms of an enthusiastic writer, has been styled the greatest therapeutic achievement of recent surgery.

It is a well-known observation that there is never anything really new in medicine. Treatment by hyperemia in some form

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THE WHITMORE HOME FOR NURSES

or other is as old as the human race, or even older. Animals are known to suck their wounds, and the same tendency is observed in infants.

Various methods of inducing hyperemia, notably that by cupping, date back in medical literature to the time of Hippocrates.

The first approach to an intelligent use of congestive hyperemia as a therapeutic agent was made by Ambrose Paré, who employed hyperemia to induce callus formation. Dumreicher and Nicolodoni revived Paré's procedure to prevent the formation of pseudoarthroses, and Helferich, in 1881, used it for insufficient callus formation after fracture and also for insufficient involucrum production after bone necrosis. Thomas used hyperemia to obtain firm union in fractures, finding it much better than the customary method of rubbing the ends of the bones together.

Bier was led to adopt congestive hyperemia as a therapeutic agent through the observations made by clinicians and pathologists. They had demonstrated that patients with stenosis of the pulmonary artery almost regularly developed a progressive pulmonary tuberculosis, and it had also been demonstrated pathologically and clinically that many cases of dilated heart showed healed tuberculosis of the lungs. The belief was entertained and is constantly gaining credence that valvular disease of the heart and relative immunity to pulmonary tuberculosis are associated together. Stenosis of the pulmonary artery signifies anemia of the lung, and valvular disease and hypertrophy of the heart signify congestive hyperemia. Arguing from these clinical and pathological findings, Bier applied the use of congestive hyperemia to the treatment of surgical tuberculosis. He first used the treatment in 1892 while professor at Griefswald, but it was not until eleven years later, in 1903, that he demonstrated his method before the German Surgical Congress and brought it to the attention of the profession. In that year he published *Die Hyperaemia als Heilmittel*, 1903.

Encouraged by the favorable results obtained in the treatment of surgical tuberculosis by congestive hyperemia, Bier enlarged the scope of his method to include acute and suppurating conditions of all kinds. In 1905 he again demonstrated his method before the German Surgical Congress, reporting remarkable success with these classes of cases. At the same time Klapp, from Bier's clinic, introduced the suction method of inducing hyperemia, thereby adding to the applicability and effectiveness of the

treatment. Following these favorable reports, numerous German surgeons and specialists experimented with the treatment, and a steadily increasing wealth of contributions to the literature of the subject has occurred. Recently American, and to some extent the English and French, surgeons and specialists have become interested in this form of treatment.

There are two varieties of hyperemia: arterial hyperemia and venous hyperemia. Arterial hyperemia is caused by an increased flow of arterial blood to a part, while venous hyperemia is caused by a damming back of the venous blood current. Constrictive hyperemia is a pure venous hyperemia. Suction hyperemia is a mixed hyperemia, although probably the venous predominates. Bier makes use of both varieties of hyperemia in the treatment of diseased conditions, but a congestive hyperemia of the venous type, due to constriction, is the one usually thought of in connection with his name.

The technic of producing hyperemia varies with the situation of the diseased condition. The most common method of producing arterial hyperemia is by the application of hot air, and the credit for the introduction of this method of treatment belongs to Bier more than to any other man. In Bier's clinic, hot air has recently been used in the treatment of scoliosis, the patient sitting with the back enclosed in a hot-air cabinet. Venous hyperemia as at present used in Bier's treatment, is produced in two ways: by constriction and by suction. Venous hyperemia produced by the use of constriction can be applied only to the extremities, but the introduction of suction methods of inducing hyperemia has made nearly every portion of the body accessible to this form of treatment.

One of the most satisfactory portions of the body for the treatment by constrictive hyperemia is the elbow and in describing the technic of constrictive hyperemia the elbow will, therefore, be used as an example. The elbow being the only part it is desired to treat, it is well to bandage the limb from the fingers to just below the elbow. The constrictive bandage of rubber elastic or Esmarch bandage is applied a short distance above the elbow, and it is usually well to first apply a gauze bandage next to the skin beneath the constricting band.

The constricting band should not cause any discomfort in itself, and the sensation in the congested area should be simply that of congestion and not the prickly sensation experienced

when the foot "goes to sleep." Cessation of pain in the diseased part is a criterion for the amount of constriction necessary to produce the proper dose of congestive hyperemia. The congested area should feel warm, even warmer than the other side, and the pulse should be distinctly felt. The constriction should not be applied so as to cause the limb to turn blue. It has been found that a complete stoppage of the venous circulation does more harm than good. The congested area should swell and become edematous; Bier emphasizes the fact that there should be a *fiery red* edema. He advocates continuance of the constriction ten hours daily, and in severe cases twenty to twenty-two hours a day. He used Henle's apparatus for sensitive patients, especially for the legs.

Writing in the *Medical Record* for August 25, 1906, Bier states that he uses two degrees of congestion; marked and light, depending on the strength of the constriction. He finds that marked venous congestion is more valuable in chronic conditions, whereas the milder degree is better in acute cases. The first method, that of marked constriction, is of value in treating dispensary cases in that the treatment is applied for only an hour a day; while the second method, that of mild constriction, should be applied almost continuously, shifting the place of application every ten hours to avoid skin irritation.

In treating diseases of the head and face by constrictive hyperemia, the constriction is applied around the neck. A cotton elastic bandage three centimeters wide for adults and two centimeters wide for children, and held by hooks and eyes is very satisfactory. The constriction should cause the face to look bluish red and slightly bloated, and the inflamed part usually shows a fiery red edema. The constriction is applied for twenty hours to twenty-two hours a day.

The action of passive congestion, except in the case of cutaneous affections, is said to be enhanced by previous warm baths. It has also been found that constriction has to be tighter when the patient is sitting than when reclining.

Suction can be applied to any portion of the surface of the body, and certain internal portions are also accessible to this form of treatment. The simplest form of the suction apparatus is the glass cupping set, but all manner of modifications of form are now used. There are bell-like arrangements for going over the head and large forms to take in an entire limb. There are

numerous odd and ingenious shapes to fit the contours of various portions of the face and body. In the treatment of uterine conditions there is a cup-shaped affair fitting over the cervix, and another form made for treating the interior of the uterus consists of a uterine catheter having four wide slits three centimeters long near the tip. This is passed into the uterus and suction made. A somewhat similar instrument is used in the treatment of gonorrhoea in the male. Suction is made by means of rubber bulbs or by more complicated suction apparatus.

The general rules for the application of suction are as follows: The suction should not be too severe so as to cause pain and it should be intermittent. The suction should be applied for three or four minutes, then removed and applied again. As a rule the treatment should continue for thirty to forty minutes.

In suction, as also in constriction treatment, where dealing with infections, it is usually best to make small punctures or incisions over the center of the diseased area as an outlet for the secretions; do not wait for fluctuation. In abscesses a small incision is made at the focus of the trouble, and as a rule drainage and tamponing may be rejected.

The reports of cases treated by Bier's method are now so numerous that no attempt will be made to tabulate the results and they will, therefore, be mentioned only in a general way. As has been stated, Bier first used the congestive hyperemia treatment in cases of surgical tuberculosis, closed tubercular joints, especially, and subsequent results have confirmed his favorable findings. Healing has sometimes been found to be remarkably rapid, and it has been noted that stiff joints less often result than with immobilization treatment.

In addition to tubercular arthritis, the treatment has been used with excellent results in acute articular cases of all kinds. Immediate relief has been found to follow its use in both acute rheumatic and gonorrhoeal arthritis, and it has also been used with success in chronic rheumatism and rheumatoid arthritis. The pain and swelling associated with the intraarticular effusion of synovial fluid or paraarticular effusion of lymph are reduced. Suppurations of large joints have been reported healed without any other measures being necessary, and Bier reports cases where not even an incision was made and the joint was left with absolute normal function. In joints chronically thick-

ened or fixed, the improvement has not resulted in a complete cure. The improvement might have been as rapid under other methods of treatment. It should be borne in mind, however, that other methods of treatment, such as massage, passive motion, hot packs, etc., are simply other ways of inducing hyperemia. The value of passive motion in the treatment of chronically inflamed joints has been frequently demonstrated, and it is found to be a useful adjunct to the treatment by congestive hyperemia. It would seem that the edema produced by the passive congestion causes the ligaments to become more elastic and thus allows the passive motion to be more effectual.

Some of the best results with the congestive hyperemia treatment are obtained in acute inflammations and suppurations. Hot abscesses have been made cold. Infectious processes have been localized and pyemic metastases aborted. The necrotic plug in furuncle usually comes out on the second or third day of aspiration and incipient cases are said to be aborted at one sitting. Panaritrum and felon react well to treatment. In tendon sheath inflammations, the pain is relieved, the process is aborted or shortened and complete functional restoration is the rule. It has been noted that in the treatment of suppurations, the best results have been attained in those of a streptococcus or erysipaloid type. One surgeon states that he always used the hyperemia treatment in his abdominal wounds where he thinks there is the slightest possibility that there is not going to be union by first intention. In treating the consequences of inflammatory processes, hyperemia softens the scar tissue and promotes the absorption of infiltrates.

In osteomyelitis it has been found that acute and mild cases may recover without operation, but the results have not been so good in severe cases.

In diseases of the breast, remarkable results have been obtained in puerperal mastitis, also in chronic mastitis. Lymphangitis of the breast and deficient secretion have been benefited.

In diseases of the uterus the treatment has been found to be beneficial, harmless and painless. It relieves dysmenorrhea and disturbances consequent upon chronic inflammation of the uterus. The subjective symptoms subside, the secretions in catarrhal conditions are reduced and healing is promoted. It removes secretions from the cervix and stimulates the circulation.

It is beneficial in amenorrhea. Tough cords in Douglas' pouch have been softened and absorbed, and the aspirating cup has been used with benefit in perimetritic exudates and gonorrheal salpingitis.

Good results have been reported in suppurative conditions of the tonsils. In inflammatory conditions of the eyes, ears, nose and accessory sinuses, the subjective symptoms of pain are always relieved more or less and marked improvement follows. Renner has noted an improvement in cases of parenchymatous keratitis, but reports no favorable results in eczematous, phlyctenular and catarrhal ulcers in the cornea, nor in old opacities, but salpinginous ulcers of the cornea yielded more readily to treatment when the passive congestion was added to the usual measures. The treatment has been used successfully in otitis media, but with better results in the acute than in the chronic cases. Kopetzky states that the time established for ear function is considerably shortened.

The use of the treatment has been advocated in chronic skin cases, notably in eczema and acne.

In contusions, sprains, and fractures, the hyperemia treatment has been found highly satisfactory. It relieves pain much better than other measures. There is remarkable healing and the after-results are unusually fine. In "black-eye" the extravasated blood is absorbed two to three times as rapidly as by ordinary methods. In fractures, the entire process of healing is shortened, the callus forms more rapidly, the painfulness is diminished, functional use can be commenced much earlier and the atrophy so common after fracture is prevented. Massage is of great value following fracture, but this is also simply another method of producing hyperemia. After contusions or sprains, the treatment is applied for from fifty to sixty minutes only the first day, for it is liable to increase the pain at first. The length of time of treatment is gradually prolonged. After removing the tourniquet, the limb is massaged ten to fifteen minutes and a flannel bandage applied. Immobilization is always done.

A partial list of other lesions and diseases in which the hyperemia treatment has been used with favorable results, is as follows: encapsulated appendicular abscess, neuralgia, freezing, gonorrhea, crushed fingers, acute bursitis, inguinal buboes, orchitis, suppurative meningitis, secondary parotitis, chorea.

MANNER OF ACTION.

In Bier's first publication on the subject of treatment by passive congestion, its action was based on clinical observation and was undefined. It had been customary to look upon congestion as a harmful process, but Bier considered that acute inflammation was not something to be combated, but was one of nature's corrective processes. He thought that the antiphlogistic treatment interfered with nature.

Hyperemia as produced by hot air, counter-irritation, poultices, cupping, etc., has long been employed as a therapeutic agent, but the rationale of such treatment has not been understood. Now that the treatment by passive congestion has met with such success and its use is becoming so universal, the manner of its action is being more carefully studied. Hartwell states that active or arterial hyperemia is a functional hyperemia, rapidly moving, carrying oxygen and sweeping away waste. All the organs of the body become hyperemic during activity. On the other hand, passive congestion, *i. e.*, the slowly moving blood stream, is a tissue-building hyperemia sending its formed elements into the tissues. Absorption is delayed by congestion, but on removal of the congestion it goes on much more rapidly than before. Bier, in discussing the action of passive hyperemia on infections, says, "The retarding of the circulation renders harmless the bacteria and their toxins in the part and prevents necrosis by the superabundant nourishment it supplies to the tissues. It does all that is necessary and in the gentlest way."

Two important questions arise in considering the congestive treatment: First, why does congestion relieve pain? and second, why does the congestion prevent progress of disease and relieve the results of a previous disease? In regard to the first question, it is Bier's theory that pain is the result of irritation of peripheral nerves by concentrated exudates and hyperemia acts similarly to Schleich's infiltration. Bier and Ritter claim that all pain lets up as soon as swelling sets in.

The second question opens up a wide field for investigation, and but little work has been done along this line so far. The congestion does more than dam back the venous blood. Joseph has proved that there is a dilution of the toxins; the lymph stream is interfered with, and according to Noetzel, Laqueur and others, there is an artificial edema produced which is very

bactericidal. Hamburger finds that in the treated part there is an increase in alkalis and carbonic acid both in the blood and in the lymph (of the edema), and that both of these act as bactericides. Noetzel, Buchner, Stahr, and others say there is a marked local increase in leucocytes and probably alexins. Heile reports a marked increase in the excretion of foreign bodies and attributes it to the breaking down of leucocytes.

Colley has found that the edema fluid from a congested limb, the seat of a suppurative process, had a bacterial action not present in serum from a normal limb. He concludes that the edema fluid in the constricted limb contains anti-bodies which exert a destructive action on micro-organisms. Similar anti-bodies are found in the blisters produced by iodine. Wright has shown that an increased flow of lymph in infections is of great importance, inasmuch as it allows bacterial toxins to get into the circulation and to stimulate the formation of anti-toxins. This is an effort to aid nature. Inflammatory edema doubtless has the same effect, but has no circulation.

Wright has further pointed out that the therapeutic efficiency of measures to increase the flow of lymph to infected areas as by fomentations, Finsen light treatment, X-rays, Bier's hyperemia, etc., depend largely on the opsonic content of the blood which varies much in different cases, which can be accurately measured and which in suitable cases can be increased by bacterial vaccination. Wright and Douglas have demonstrated the presence in blood and other fluids of certain substances, called by them opsonins, which render various bacteria susceptible to the phagocytic action of leucocytes. Normal human serum contains opsonins for staphylococcus, streptococcus, pneumococcus (of feeble or medium virulence), meningococcus, gonococcus, the influenza, diphtheria, and pseudodiphtheria, anthrax, tubercle, typhoid, colon, comma and pest bacillus and probably many others.

Immune opsonins can be formed by immunizing an animal against a germ, *i. e.*, the opsonic index, so called, is increased. It has also been shown that the opsonic power of human serum toward tubercle bacilli can be increased by minute doses of tuberculine. It does not necessarily follow that phagocytosis of bacteria is always synonymous with their destruction. The phagocyte may be killed by the toxic products of the bacteria taken up, which may in the meantime, perhaps, have grown in virulence. In this case, phagocytosis might be the means of spreading

rather than limiting the infection. Thus in using means to induce leucocytosis or phagocytosis Wright cautions against the danger of depressing the opsonic content by these agents.

Wolff-Eisner point out that Lexer was one of the first to study Bier's method scientifically and experimentally and as the conclusion to an interesting and instructive investigation find that:

1. The congestion works favorably when a complete bacteriolysis is present and the number of bacteria is so small that only a small amount of endotoxin is set free. This is true in light cases or at the beginning of bad.

2. Congestion is unfavorable where bacteriolysis is not complete, and when after removing the congestion a great quantity of endotoxin is thrown into the circulation. He further observed that there are cases of streptococcus infection or severe forms of mixed infection with staphylococcus in which congestion not only fails but often causes a general exacerbation.

BENEFITS, CRITICISMS AND WARNINGS.

What then are the benefits to be derived from the treatment by passive congestion? Bier says there is almost always immediate arrest of pain, the course of suppurations is hastened, necrotic tissues are more rapidly thrown off and parts are kept alive which seemed doomed to necrosis under ordinary means. The treatment localizes affections, thus saving from mutilating incisions, while at the same time the ideal function is restored. Edema and redness gradually subside under the congestive hyperemia even before the constriction is removed.

The treatment does away with the necessity for large incisions and for tamponing. When the suction treatment is used there is no danger of infecting a cold abscess after incision. Stress has also been laid on the beneficial effect of the arterial reaction after removal of the constriction.

Attention has frequently been called to the harmlessness of this method of treatment and yet there are numerous criticisms and warnings against its use. Mosetig-Moorhof declares that this treatment should not be countenanced because it will occasion an acute dissemination of the infectious agent which will produce a rapid progressive extension of the local disease and at the same time a rapid invasion of the whole organism.

It should be remembered that passive hyperemia does not take the place of incision and cases should be watched very closely

not to let the proper surgical moment go by. Mention has been made of Wolff-Eisner's findings, and it seems to be generally admitted that great caution should be used in the treatment of severe infections. Rubritius reports that great harm is liable to follow in the case of existing general infection; the general infection seems to become aggravated. Stich reports an arm becoming permanently contracted with chronic edema and inability to use the fingers from the excessive and over-long application of constriction. Gangrene has been reported as following the use of passive congestion in cases suffering from diabetes. Arterio-sclerosis and old age are also contraindications to its use. Young children and children with adenoids are not good subjects for treatment, and patients with cardiac or kidney lesions are not eligible due to the extra work that would be thrown on the heart.

Bier gives the following contraindications: Beginning amyloid changes; severe pulmonary phthisis; large joint abscesses; and in the knee, marked malposition of affected parts.

In conclusion, therefore, it would seem from the numerous favorable reports and observations, that an important therapeutic advance had been made and that congestive hyperemia is a form of treatment that has come to stay. The cases that have been reported from Bier's clinic alone now number into the thousands. Habs, after an experience with two hundred cases, gives a favorable report. Sich has treated two hundred and fifty cases with mostly good effects. Stich reports two hundred cases with good results and Danielson two hundred and sixty cases with only two per cent. of failures. In addition there are a host of men reporting favorably on smaller number of cases and such authorities as Kocher and V. Eselberg speak highly of the treatment.

It is a recognized fact, however, that any new line of treatment has only favorable reports at first, and it is only later that the failures and criticisms begin to come in. Mention has been made of several such reports, and as time goes on and more careful experimentation is carried out the weak points in the treatment will be disclosed, the rationale will be better understood and the method improved. At present it would seem that the advance in understanding the rationale of the treatment would be chiefly in investigations along the lines laid down by Wright: A more thorough study of the organism concerned in the af-

fection, its numerical strength and virulence, and following that a measurement of the opsonic index of the blood.

I have used congestive hyperemia in my practice in numerous instances, but not enough times to warrant a detailed account. The results have been universally successful, but the most striking result was obtained in healing an old tubercular sinus which had persisted and resisted other forms of treatment for nearly a year. Under suction treatment it closed and healed in a marvelously short space of time.

An excellent result was also obtained in a case where there was a fracture of two metacarpal bones. The case had been untreated for two weeks and there was no evidence of union, but under congestive hyperemia treatment union occurred in less than a week. Other cases that I have used the treatment in are: Infected arm, infected wound, chronic swelling and tenderness following an infection in a toe; crushed foot and old sprain of wrist.

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INEBRIETY SHOULD BE TAUGHT IN MEDICAL COLLEGES.

By T. D. CROTHERS, M. D.,

Hartford Conn.

The diseases and injuries which are directly or indirectly traceable to the use of spirits and narcotic drugs, if not increasing, are clearly becoming more prominent every year. Practical physicians, engaged either in general or special practice, assert positively that alcohol and narcotics are very common causes and always serious complications in many of the diseases they are called to treat. Medical men with hospital and large general practice have estimated that at least ten per cent. of all cases are suffering directly or indirectly from the poison of alcohol and other narcotics. Many of these cases are so-called moderate drinkers, or use spirits at long intervals, or take narcotics irregularly for various purposes. A certain class of cases who drink excessively come for treatment, and the disorders from which they suffer are clearly traceable to the spirits used. Another class have complex disturbances, not so clearly due to spirits, yet recover quickly from the withdrawal of spirits and narcotics. A third class are well-marked inebriates, who appeal constantly to the profession for help, and receive the stereotyped advice to "stop drinking." There is probably not a physician of any class or school who has not been called for counsel and help in cases of moderate or excessive drinking.

This is increasing with every advance of scientific knowledge. The degenerations which follow from the use of alcohol, and the disease of inebriety in which the craze for spirits is a symptom are becoming more and more recognized in practical medicine. Busy physicians find clinically that alcohol is the very genius of degeneration when used as a beverage and continuously. Also that the drink paroxysm and morbid impulse to procure spirits at all hazards is something more than a moral state or a weak will power. In some vague uncertain way the possibility of disease may be recognized, but how to study and what means to use in the treatment are practically unknown. The text-books of medicine give little or no information, and the physician is obliged to turn to moral and ethical lines of treatment.

He gives lectures, warnings, appeals and threats, and possibly placeboes, or he may administer secretly remedies to cause nausea, or give narcotics to check the morbid impulses. By these means he expects to rouse up the weak will, or produce disgust for spirits, and thus give new power to abstain for the future; or by checking the drink impulse by narcotics, destroy it. These means fail, and not infrequently the use of morphine beginning in a prescription ends in its addiction. Chloral, cocaine and other drugs, begun in this way, are equally disastrous. This failure of the family physician to relieve or even to check the inebriety only for a short time opens the door for all sorts of quack remedies and charlatan schemes. The recent wild wave of gold cure specifics, with its boastful pretensions, would never have been possible had the physical nature of inebriety been recognized by the family physician and proper treatment given.

Thousands of cases, in despair of any better means for relief, have taken these secret remedies and received temporary relief, only to realize later that they were more incurable and the drink craze more difficult to control. Thoughtful men in the profession recognize a field of practical work in the scientific study and treatment of the inebriate, but suppose it confined to specialists. In reality, the inebriate is more curable in the early stages, at home under the direction of the family physician. The prevention of inebriety can only be accomplished here, and, as in other diseases when the case is neglected until chronic stages come on, the possibility of cure becomes more remote. The use of alcohol alone in a previously healthy person is followed by poisoning with cell and nerve starvation and central exhaustion. The use of alcohol in an unknown proportion of cases is from the beginning a symptom of derangement and exhaustion, a predisposition, or a demand for relief from some organic suffering. In all these cases poisoning, starvation and exhaustion are present. Derangements of nutrition, growth, development and environment, associated with inherited or acquired defects, appear in every case. These are physical facts, the knowledge of which is absolutely essential to the rational treatment. The assertion has been made by reliable authorities that one-tenth of the male population use spirits as a beverage, either in moderation or excess. At least half of this number appeal to medical men for help from disorders due directly or indirectly to the use of spirits. The chronic cases from the lower walks of life, who are

inebriates, constitute a class who are ever appealing for medical assistance. Another class higher up and actively engaged in the world's work, yet suffering from the effects of spirits, mutely turn to the family physician for help, and both classes fail, the physician is unable to give relief.

He is unacquainted with this malady ; he cannot understand the condition of these poor victims who are whirled rapidly down the road to dissolution by laws and forces that are largely unknown. The physical study of inebriety has reached a point where the facts are sufficiently clear and established to make it possible to teach authoritatively some of the conditions, causes and natural progress of inebriety, and to point out certain general therapeutic principles available and practical in its successful treatment. From this study comes the clearest evidence that a large proportion of all inebriates are curable in the early stages through the family physician's care and wise counsel. His knowledge of the environment and physiological conditions of the patient's life and living, enable him to use means and remedies for the cure with very great certainty. The possibility of prevention and cure in the early stages along these lines are fully equal to that of any other disease, when used by the intelligent medical man.

The time has come for a public recognition of this need by the medical colleges of the country. The students who go out without some idea of inebriety from a medical point of view, are unable to treat or counsel wisely the first cases they are called to for help. While they may not be any more incompetent than other physicians to treat such cases, they are clearly without capacity and knowledge to render assistance that would give them a permanent reputation for the future. The drinking man who sends for the young physician because he is a stranger, hoping for some relief which the family physician has failed to give, is disappointed. The new physician has less knowledge than the elderly man, although he has recently graduated at the head of his class. Had he been taught some general facts of inebriety, it would have been the opening door for a successful practice in the future. There are vast numbers of men and women who are literally supporting armies of quacks and charlatans, simply because the medical men are unacquainted with and unable to treat their disorders. The progress of medical science and wider range of instruction given

in colleges are slowly and steadily reducing the ranks of these chronic cases. The inebriates constitute the largest class of these defectives, and the few pioneer students who are pointing out the physical side of these cases and the new realm of practice, appeal to medical colleges to instruct its students along this new line of prevention and cure. Every graduating class should have four or five lectures on the general facts which are prominent in the causation and progress of inebriety. This will enable them to not only study these cases but to act intelligently when called for counsel and advice. It is such knowledge as this that will help solve the drink problem and raise its present treatment from the realm of quackery into the field of exact science.

An eminent man in a recent speech said, "I despair of any great progress in this drink question until medical men shall take up this matter and teach us the facts and their meaning." To this I add that the time and literature and magnitude of the subject call for instruction from our medical colleges. There is a demand that young men, medical men, be equipped with some knowledge of the most numerous cases they will be called on to treat in many circles of life. The theories and delusions concerning inebriety, repeated in every community with the assurance of being positive facts, fail when tested at the bar of accurate inquiry, and the real facts will appear only from careful examination by medical men. It is from a knowledge of the phenomena of this drink problem only that means for cure and relief can be ascertained. Medical instruction of students along this new line is a need becoming more apparent every day.

DIET IN DISEASES OF CHILDREN.

Read before the Hartford Medical Society, December 18, 1906.

BY W. G. MURPHY, M. D.,

Hartford, Conn.

An eminent authority has said the treatment of a disease is easy if you make a correct diagnosis. This statement applies also to diet. If one knows the exact condition of the digestive organs and has a full appreciation of the needs of the general system, arranging a diet is not particularly difficult.

In children, diet is one of the most important and perplexing problems with which we have to deal; important because most of the deaths in little babies are due to diseases of nutrition, and perplexing because no general rule can be applied to all conditions. Children differ greatly in their requirements and digestive ability, one food will not suit all and some do well on most surprising and impossible mixtures.

Russell says, "it would simplify treatment if accurate rules of diet could be formulated." The requirements of a healthy individual are discussed in all physiologies. The exact requirements of a diseased individual are unknown.

In preparing a paper on diet in diseases of children, these facts have been constantly in mind, and I fully realize the impossibility of formulating rules to apply to all sick babies. Diet is essentially a study of the individual and his needs. Diet in children is more important than in the adult. Children are so susceptible to nervous influences and shock that the whole system is easily disturbed and the digestive organs are involved in most acute diseases; often the deranged stomach accompanying an acute bronchitis is more troublesome than the primary disease of the lungs.

In presenting this subject for your consideration, I wish to make three arbitrary divisions:

1. Diet in acute diseases accompanied by high temperature.
2. Diet in diseases of a more chronic character of a continued or moderate temperature.
3. Diet in chronic diseases or diseases in which temperature is not an important factor. Any classification must of necessity be imperfect.

Temperature is selected as a guide in this classification because in fever there is always an inability to digest food, due to a lessened secretion of hydrochloric acid in gastric juice. Other changes occur, probably equally important, but the interference with the secretion of hydrochloric acid is emphasized because of its direct bearing on a diet principally of milk. The office of hydrochloric acid in gastric juice is two-fold: first, it is an aid to digestion, and second, it is a germicidal agent.

Casein, which occurs in milk, combined with calcium, is known as calcium casein. This, acted upon by rennet, forms a soft clot known as calcium paracasein. Without acid, this clot passes into the intestine, where it is digested by the pancreatic and intes-

tinal secretions. In the absence of acid, pepsin cannot attack calcium paracasein. In the presence of hydrochloric acid, there is a combination of the acid with the calcium of the clot, releasing free paracasein. The acid secreted combines only with the calcium with which it comes in contact, the remaining unaltered paracasein passes on into the intestines. In human milk digestion, this function is carried on perfectly in health through the whole nursing period with difficulty in disease, and with cow's milk often not at all. Artificially fed babies require more hydrochloric acid for purposes of digestion than breast fed, owing to the greater saturating power for acids of the casein of cow's milk. With an absence of hydrochloric acid, as in fever, milk is not properly prepared for digestion and often acts as an irritant.

Second. Kurlow and Wagner found the hydrochloric acid of gastric juice a strong germicidal agent. All bacteria were destroyed by normal gastric juice in less than one-half hour, except the tubercle bacillus, the bacillus of anthrax and perhaps the staphylococcus.

In the digestion of milk, which is the principal diet in children, these two facts are exceedingly important, and I believe we are justified in saying that milk not acted upon by hydrochloric acid enters the intestinal tract unprepared for digestion and, equally important, offering an excellent culture medium for the growth of bacteria. This is more pronounced in cow's milk than in human milk.

In high-temperature cases, if food is given too early or in large quantities, there is a decomposition in the intestinal tract absorption and a second toxemia engrafted upon the toxemia of disease already present. This is often seen in pneumonia.

In acute illness there is anorexia, nausea, often vomiting, coated tongue and thirst. Graetzer says these symptoms, obviously intended to prevent overfeeding at a time when the digestive powers are greatly disturbed, should be taken as a reliable guide in treatment. It is often surprising to see very delicate babies withstand a grave attack of sickness with hardly any nourishment at all. Like fish, they seem to thrive on water.

The treatment then, in diseases of the first class, would be to withhold all food, giving only water to drink while the temperature is high or until the intestinal tract has been cleared by calomel or oil, and then diluted milk may be given. In acute diseases of the gastro-intestinal tract all food should be withheld

for twelve or twenty-four hours, and then dextrinized gruels, beef juice, albumen water or water, depending upon the lesion, resuming a milk diet slowly and carefully.

In class two are prolonged attacks of sickness, accompanied by fever, where the patient's strength must be maintained. As examples we have typhoid fever, the exanthemata, diphtheria and the subacute diseases of the gastro-intestinal tract. The problem is to feed the child without complicating the already existing disease. Jacobi says it is always better to prevent trouble than to get busy after disaster has occurred. A general rule is a child needs less food in febrile diseases than in health. A specific rule is weaker food and more water.

In infants the nursing period may be shortened from twenty minutes to five or ten, or a single breast may be given instead of both. In artificially fed babies the milk should be reduced one-third or one-half, or it may be necessary to stop milk altogether and give broths, albumen water or dextrinized gruels, or the milk may be peptonized. Regularity in feeding should be observed in sickness as in health. Water should be given freely between feedings.

In diseases where care of the kidneys must be observed, milk is a safe food. In gastro-intestinal diseases, the ability to digest milk, as seen by a careful study of the stools, is a safe and reliable guide. Diet in these conditions must depend upon the patient's general state and digestive capacity, bearing in mind the fact that children rapidly become anemic. These cases cannot be treated by rule of thumb. The time was when all adult patients with typhoid were expected to take at least two quarts of milk in twenty-four hours. A certain quantity was given at regular intervals day and night. Then the pendulum swung from this plan to a combination of milk and semi-solid food, and lately it seems to be popular, as shown at the meeting of the B. M. A. at Toronto, to feed less liquid and more solid and semi-solid food through the whole course of the disease. No one plan of feeding can be safe and successful in all cases.

There are generally two classes of children, those who eat too much and those who do not eat enough to maintain strength. In the first class the temperature is higher, distention increased and the degree of toxemia more than can be accounted for in the natural course of the disease.

In the second class prostration is extreme, and the giving of

sufficient nourishment in prolonged cases is often a serious question. In these cases a small amount of nourishment at frequent intervals is better than attempting a regular schedule for feeding—children bear inanition very badly. It may be necessary to use force.

The treatment of the second class may be said to be in all diseases where the gastro-intestinal tract is not involved, feed milk. In gastro-intestinal diseases, milk plain or modified, and if curds are seen in the movements, predigested or sodium citrate, or, if milk is not well borne in any form, broths, dextrinized gruels, the amount and frequency of food depending upon the individual. Jacobi says what the child eats is important, but of little consequence compared with what it digests.

In the third class perhaps the most important disease is chronic gastro or intestinal indigestion in its various forms, not only on account of its frequency, but the effects on the growth and development of the child. Many serious and prolonged diseases of nutrition have their beginnings in a neglected gastro-intestinal catarrh.

Diarrhea or constipation, anemia, diseases of the skin and glands, colic and failure to gain in weight are frequent results of indigestion. In breast-fed babies, suffering from effects of poor milk or bad nursing habits, an examination of the mother's milk is necessary for a complete diagnosis. Often a poor milk may be changed to a good milk. In bottle-fed babies, a proper interpretation of the objective symptoms will suggest changes often surprising in their results. In this class also are a number of chronic diseases which present fairly definite indications for treatment. These are cases of inanition, in which an increase of food is necessary, rachitis requiring, according to Cheadle, increase in fat, scorbutus indicating fresh cow's milk and fruit juice, the lithemic state, at times shown by frequent attacks of tonsillitis or pharyngitis, or chorea, requiring a lessened nitrogenous diet, simple glycosuria and diabetes, in which the intake of sugar must be watched, and the frequent cases of tuberculosis, in all forms in which a full diet is necessary.

As a universal diet, milk holds first place in children in health and disease. In the use of cow's milk, as a substitute for breast milk, during the first nutrient period and in sickness of older children, many physicians are satisfied to simply prescribe milk, with a feeling that having done so they have fulfilled all require-

ments for a safe and suitable diet. When milk is employed we should be certain that it is fresh and clean.

Modern teachings in infant feeding show that summer diarrhea, with rare exceptions, means practically summer artificial feeding. In this, the results of bacterial changes are recognized. The physical and chemical difference between cow's milk and woman's milk is known and appreciated in arranging a diet for little babies, and efforts are directed against contamination.

The arguments for a clean, fresh milk for infants apply equally well to milk used in sickness in older children.

Thompson says, the cardinal principles of feeding the sick involve first, the avoidance of all articles that disagree with the condition present, and second, the giving of food best adapted to relieve the digestive organs of unnecessary labor and to maintain nutrition.

In children these requirements are fulfilled by milk; best by clean milk.

Editorial

The origin of the word leach (physician) which has puzzled some inquirers, is from *lich*, or *leac*, a body. *Leich* is the old Saxon word for surgeon.

Sir EDWARD BULWER LYTTON, *Bart.*

Harold, the Last of the Saxon Kings.



Brain Puncture

In view of the great value determined in recent years for the operation of lumbar puncture, it is not surprising that an analogous procedure for the diagnosis and treatment of cerebral conditions should have been attempted. As is often the case in apparently new undertakings, this method has not only been suggested, but has its earliest history in a comparatively remote period. As early as 1856 Middeldorpf presented a communication, "Ueber die Acidopeirastik," in which he described an exploratory puncture of the brain, resulting from his experience with instruments devised for the antrum of Highmore. He trephined the skull in cases of encephalocele, cephalhaematoma, hydrocephalus and carcinoma, and ventured puncture of the ventricle and of a carcinoma, which had destroyed the bone. Maas, in 1869, recommended puncture for the relief of cerebral abscess, and Schmidt, in 1893, believed this might be done for diagnostic purposes. He suspected an abscess of the temporal lobe, trephined the skull

one and a half centimeters above the insertion of the auricle, and introduced a gimlet-like instrument to a depth of from two to two and a half centimeters, without result. An autopsy, three days later, revealed the harmlessness of this operation. In 1896, Payr experimented upon dogs, using straight and curved aspirating needles, harpoons and glass capillary tubes. Kocher, in 1899, used trephining and puncture for purely therapeutic purposes for injection of tetanus antitoxin. Neisser and Pollack later took the hints conveyed from these various sources and made a systematic investigation, following experiments upon the cadaver. They concluded that brain puncture is a legitimate operation in its field. They used an electric borer, having plane parallel surfaces of width from two and a third to two and two-thirds millimeters. Under ethyl chloride the scalp and skull were perforated in a few seconds, puncture needles seven centimeters in length and one millimeter in diameter were introduced, and an aspirator was then applied. No unfavorable results followed. Neisser and Pollack proposed the following definite sites for operation:

(1) For the frontal lobes, two points on a line drawn backward from the center of the supraorbital ridge parallel with the median line, one, four centimeters, the other, eight centimeters from the beginning of the line. From the latter point the anterior horn of the ventricle is reached at a depth of from two to five centimeters.

(2) For the cerebellum, the central point of a line joining the occipital protuberance and the apex of the mastoid process.

(3) For puncture of the central fissures, Kocher's cyrtometer for locating the sulcus precentralis is used, whereby the course of the anterior branch of the middle meningeal artery is determined, closely behind which is the gyrus precentralis.

(4) and (5) The boundaries between the central and parietal lobes, between the parietal and occipital and between the occipital and temporal are determined by the same instrument, and a point for the parietal and occipital lobes is taken at about the center of these parts of the brain.

(6) For puncture of the temporal lobes, two points are given, one from one to one and a half centimeters above the insertion of the ear; the other one and a half centimeters forward. The descending horn of the ventricle is reached here at a depth of about three centimeters.

(7) As the most serviceable site for puncture of the lateral ventricle, a point from two and a half to three centimeters laterally from the bregma is preferred, as preferred by Kocher for injection.

In an exhaustive article ("Ueber explorative Hirnpunctionen nach Schädelbohrung Zur Diagnose von Hirntumoren") upon the difficulties in diagnosis of focal cerebral diseases, B. Pfeiffer, in *Archiv für Psychiatrie und Nervenkrankheiten* (42 Band, 2 Heft), sets forth the value and possibilities, and, we may add, harmlessness, of the operation of brain puncture. In twenty cases, seventy-five trephinings were done and eighty-nine punctures. In three cases sarcomata were differentiated by the microscopical examination of the tissues obtained; in one, endothelioma; in three, gliomata, and in one, probable diffuse gliomatosis. It was also possible, in several cases, by multiple puncture, to determine the depth and extent of the new growth. In comparing the clinical diagnosis with the results obtained by puncture, this series of cases revealed three errors and three undetermined, whereas after puncture no diagnosis was faulty, although three were undecided.

In the focal diagnosis of the fourteen cases determined clinically, errors were found after operation in three, and the results were indefinite in two; whereas there was no error in any of the results of puncture, though two cases were indefinite; an exact focal diagnosis was established by puncture in twelve of the fourteen cases. Of these twelve cases, the tumor was operable in nine. Of the nine cases no result was to be expected from operation, partly because of severe constitutional symptoms, and partly on account of metastasis. There were thus five cases successfully treated.

Pfeiffer concludes that brain puncture is an important, relatively safe diagnostic aid, and believes he has shown that—

(1) The general clinical differentiation of a brain tumor from other brain diseases may be made, especially as hydrocephalus internus and externus may answer the difficult question of focal disease or cerebral atrophy;

(2) The local diagnosis of a new growth may be modified or verified, and particularized in all its bearings;

(3) The result of operative treatment may be anticipated; and

(4) A direct therapeutic effect may be obtained in the evacuation of cysts and of hydrocephalus internus, by reduction of cerebral pressure.

Little Biographies

XV. JOHANN KONRAD PEYER.

FOR the most accurate early description of the lymphoid structure of the intestine, particularly the agminated follicles, the so-called Peyer's patches, we are indebted to Johann Konrad Peyer, who was born of gentle parentage in Schaffhausen, Switzerland, December 26, 1653, and died there February 29, 1712.

Peyer commenced his medical studies in Basle, but later went to Paris where he studied under Duverney; he afterwards returned to Basle to complete his education and there received the degree of Doctor of Medicine in 1681. He settled in his native town and engaged in active practice, but also devoted himself largely to teaching and to anatomical and pathological research, and occupied successively the chairs of Rhetoric, Logic and Physics. As a man he was much esteemed by his contemporaries, and as an anatomist and investigator he occupied a prominent place among the scientists of his time. He was a member of the Royal Leopold Academy, the "Academie des Curieux de la Nature."

The title of the work by which he is best known, and on account of which his name has been applied to certain anatomical structures in the intestine, is "*Exercitatio anatomico-medica de glandulis intestinorum earumque usu et effectibus*," etc. It was first published in Schaffhausen in 1677, later appeared in the *Bibliotheca Anatomica* of Magnetus, and still later formed part of a book called "*Panerga anatomica et medica septem*," published in Geneva in 1681, in Amsterdam in 1682 and in Leyden in 1722. His attention was first attracted to the agminated follicles in the intestinal canal of a turkey, but upon further investigation he found such structures also in the intestine of man and other species of mammals. His description, which includes both solitary and agminated follicles, is very detailed as to their size, situation and structure, as to the variations which may be noted in them according to the age and species of the individual examined, and as to their relative location in the intestine. He believed that their function was purely secretory, an opinion that was held by Sylvius before him and by all anatomists after him for nearly two centuries. Peyer also noted that they were much altered in certain diseases of the intestinal tract.

Contrary to general opinion, Peyer was not the discoverer of these structures, nor was he the first to describe them. He himself acknowledged in his monograph that they had been described before; he only claimed to have given a better and more accurate description than any of his predecessors. Hippocrates, Galen and Gabriel de Zerbis mentioned them, Wepfer, Steno and Malpighii described them, Severinus described them in almost as much detail as did Peyer, and they were not unknown to Pechlin and Duverney.

It was just after this work was published that he went to Paris to study under Duverney, to whom he dedicated his monograph entitled "*Methodus historiarum anatomico-mediarum exemplo ascitis vitalium organorum vitio et pericardii coalitis cum corde nati illustrata*" (1679), a work which was endorsed by the Faculty of Medicine in Paris. In this treatise Peyer stated that in his opinion the dissection of cadavers (post-mortem examination) was a fertile source of discoveries applicable to the treatment of disease. He suggested that in the account of all such examinations the investigator should give first, the clinical history of the case, and then an accurate description of the post-mortem findings; that he should compare the two carefully, and finally should report the opinions of any previous investigators upon the same subject. Thus it may be seen that the "modern" judicial and objective method of studying disease is not so modern as is usually supposed. To illustrate what he considered the proper method, he gave in detail the history and post-mortem findings in a case of adherent pericardium, and stated that in his belief the earlier reported cases of absence of the pericardial sac were errors of judgment on the part of the observers and were really examples of this same affection.

Peyer's third important work was entitled "*Myrecologia sive de rumanibus et rumantie commentarius*" (Basle, 1685). This belongs more to the domain of comparative than to human anatomy. It is one of the earliest contributions of note to our knowledge of the digestive organs of ruminants. Here again his descriptions are most detailed and show most careful and painstaking research. Other of his treatises were entitled "*Observatio de uteri et vesicae urinariae procedentia*" (1683), "*Experimenta nova circa pancreas*" in the *Bibliotheca Anatomica* of Magnetius and La Clerc, and many contributions of importance upon subjects of anatomical, physiological, pathological and

teratological interest which were for the most part published in the transactions of the academy of which he was an honored member.

CHARLES K. WINNE, JR.

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Scientific Review

THE WIDAL REACTION.

ITS LIMITATIONS AND CLINICAL VALUE.

A REVIEW OF SOME OF THE RECENT LITERATURE.

There are comparatively few pathognomonic signs in medicine. Only rarely is the clinician relieved of the necessity of a careful study of all the available data regarding a case. This is as true of the results of laboratory tests as of other signs and symptoms of disease. The finding of tubercle bacilli in the sputum or of malarial parasites in the blood at once settles a diagnosis which may have been doubtful before, but a negative result even in this test, gives little help. The majority of laboratory examinations furnish merely corroborative evidence which should be given due weight, no more. It is necessary for the physician, at the bedside to keep in mind the limitations of such tests. This requires effort and study on his part, but any other course is dangerous. Lives have been sacrificed to a blind reliance on misinterpreted laboratory reports while the careful study of physical signs and symptoms has been neglected. The absence of tubercle bacilli in the sputum has put more than one doctor off his guard until it was too late to save the patient. A negative report from a throat culture has more than once delayed the use of antitoxin until death from diphtheria became inevitable.

The Widal reaction has a number of limitations, but it also has considerable clinical value. The clinical value can be accurately determined only after the limitations have been recognized and studied.

The Widal test is based on the fact that typhoid bacilli, placed in the diluted blood serum of a patient suffering from typhoid fever, lose their motility and come together in masses or clumps. The exact cause of the clumping is unknown. It is believed to be due to the effect upon the bacteria of certain substances circulating in the blood (agglutinins), which are formed as the result of the action of the typhoid bacilli or its products on the cells of the body.

Widal,¹ although not the first to observe agglutination, improved the methods that had previously been used and made the test available for clinical purposes. His first communications regarding it were published in 1896.

The reaction may be observed either with the naked eye (the macroscopic method) or under the microscope (the microscopic method). In the former case the occurrence of the reaction is indicated by the gradual clearing of bouillon culture, to which the serum of the typhoid patient has been added. Flocculi are seen to form which gradually settle to the bottom of the test tube. In the latter case the actual formation of clumped masses of bacilli is observed under the microscope.

The macroscopic method of making the Widal test has the advantage that it may be carried out without the microscope, and if killed the cultures are used without the conveniences of a bacteriological laboratory. The Ficker "typhus-diagnosticum" and the various Widal outfits furnished by manufacturing pharmacists consist of a series of tubes containing dead bacilli in a culture, to which the serum of the patient may be added. The preparation is then laid aside in the physician's office and examined after some hours for the presence of flocculi or sediment. The disadvantages of this method are that while the flocculi are easily recognized by an experienced observer, they sometimes require the use of a hand lens for detection and may be overlooked by one without experience; considerable time is required for the completion of the test.

The microscopic method is the one now generally used. In this method the test is made either with blood serum or with dried blood. The whole blood (corpuscles and plasma) in a

fresh condition is rarely employed, as the presence of numerous corpuscles obscures the reaction. "The dried blood" method suggested by Widal and popularized by the late Wyatt Johnson, of Montreal, has been used in many municipal laboratories. A drop of blood is placed on a glass slide, a visiting card, or a piece of sized paper and after drying is sent to the laboratory, where it is diluted. The usual method of diluting the specimen is to add drops of the diluting fluid to the dried mass, each drop being as nearly as possible the estimated size of the

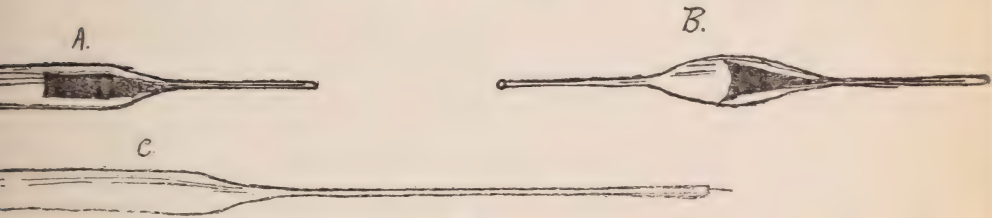


Fig. 1



Fig. 2—No REACTION.



Fig. 3—POSITIVE REACTION.

original drop of blood. Accurate dilution by such a method is impossible.

The fresh serum is now more generally employed. A favorite method of collecting the blood is by means of a short bulb made from glass tubing about the thickness of a quill, or by means of small glass pipettes made of the same glass, the open end being closed with a cotton plug. (Fig. 1 A and B.) The finger or ear lobe is punctured with a sharp edged needle and a

number of large drops are squeezed into the bulb or pipette until it is nearly full. The specimen is then laid aside until the serum separates from the clot. This usually takes place within an hour. At the laboratory one end of the bulb is broken off, the serum is withdrawn by means of a simple capillary pipette (Fig. 1 C) and accurately diluted. In making the dilution, the drops of serum and of diluting fluid are measured with the same pipette and are all of the same size. With the diluted serum is mixed a definite proportion of a young bouillon culture of the typhoid bacillus. A drop of the mixture is next observed under the microscope in a "hanging drop" preparation. If a positive reaction is obtained the actively moving bacilli gradually cease their motion and become clumped together.

Whatever method is used a reliable culture of the typhoid bacillus is necessary. Different strains show variations in the extent to which they are agglutinated by the serum of typhoid patients. In many laboratories a culture is used derived from the so-called "Pfeiffer" culture isolated from a case of typhoid fever in Germany. When the test is made with living bacilli a "stock" culture of the organism is kept on agar and from this the bouillon cultures which are used in the test, are prepared each day. The bouillon culture should be less than twenty-four hours old.

At first it was not thought necessary to dilute the serum of the patient before mixing it with the typhoid culture, but Widal, Grübaum² and others soon noticed that undiluted serum even when derived from healthy persons, might cause agglutination, though it did not invariably. This agglutinative property of normal serum was found to disappear in most cases when the serum was diluted. Dilution had no such effect on the serum derived from typhoid patients. For awhile a dilution of one to ten was considered sufficient, but recent workers recommend much higher dilutions, one to sixty or more. In rare instances reactions are obtained from normal serum, even when such high dilutions are used. Biberstein³ states that a reaction occurs in two per cent. of normal cases when a dilution of one to thirty is used, but in less than one per cent. of cases when a dilution of one to forty is used. Kuhnan⁴ obtained a reaction in nominal cases thirty times when using a dilution of one to thirty and only once with a dilution of one to fifty.

Variations in the intensity of the reaction can be measured

by varying the degree of dilution. If a reaction occurs when a dilution of one to twenty is used but not with a dilution of one to thirty, the agglutinating powers of the serum can be represented as disappearing between these two degrees of dilution.

Various fluids are used in making the dilutions. Sterile water normal salt solution and bouillon have all been used with good results.

The rapidity with which a reaction takes place varies with the intensity of the agglutinating power. Accordingly it takes place more slowly in highly diluted preparations than where low dilutions are used. In the latter case it often takes place almost instantly, while in the former the clumping may not occur for hours. An arbitrary time limit of two hours is often set.

The various steps in the making of the test by the microscopic method may be briefly summed up as follows: the blood is collected in a glass bulb, the serum is allowed to separate, a drop or more of the serum is withdrawn from the bulb by means of a fine glass pipette, dilution is made by adding to the drop of serum a certain number of drops of diluting fluid measured with the same pipette, the diluted serum is mixed with a definite amount of a bouillon culture of the typhoid bacillus less than twenty-four hours old, a drop of the mixture of diluted serum and typhoid culture is placed in a hanging drop-slide and examined under the microscope. If clumping and cessation of motility occur within a definite period, usually two hours, the reaction is considered positive.

The time of the appearance of the reaction in the course of the disease varies. In a few cases it is early, even on the first day, according to Kreissl⁵ and Simon.⁶ The first day of the disease is by some clinicians considered the first day in bed, while others reckon back ten days from the first appearance of rose spots. According to Tobieson⁷ when the dilution of one to forty is used when the preparation is watched for two hours a reaction is obtained in thirty-five per cent. of cases during the first week of the disease. According to Wood⁸ when a preparation in which a dilution of one to sixty is used is observed for an hour the reaction occurs in ten per cent. of cases during the first week. Iverson⁹ found agglutination in the first week entirely lacking or so slight that it was present only in low dilutions and therefore could not be distinguished from the

actions caused in low dilutions by normal sera. Iverson found the reaction present in about eighty per cent. of cases during the second week when the dilution of one to sixty was used and the preparation observed for an hour. In almost all the other cases he studied it appeared within the first four weeks. He found it sometimes for the first time during a relapse. Iverson believes that it occurs sooner or later in all cases of typhoid fever if the test is made often. Kreissl¹⁰ obtained the high average of ninety-five and eight-tenths per cent. of positive reactions in the cases of typhoid fever which he studied. Libmann,¹¹ using a dilution of one to twenty and the dried blood method, has never seen a case which did not give a reaction at some time during its course. Cabot¹² collected over eight thousand cases of typhoid fever, ninety-five per cent. of which gave a positive reaction at some time during their course.

If only one or two examinations are made the number of positive reactions obtained is much smaller than when tests are made at frequent intervals. This is due to the fact that in some cases, agglutination appears to a sufficient degree to cause a positive reaction for a few days, and then becomes much weaker, so that the reaction occurs only in low dilutions such as one to five and the next day may not be obtained at all. It is also an interesting fact that the reaction is sometimes obtained with highly diluted sera when no reaction is obtained with low dilutions. Libmann¹¹ reports a case giving a positive reaction at a dilution of one to four hundred although negative at lower dilutions. Such results have been attributed to the "lytic" power of the serum or to the presence of "pro-agglutinoids," but are not well understood. On account of them both low and high dilutions should be used; the low dilutions so that cases in which the agglutinating power is slight may not be overlooked, the high dilutions to eliminate the errors just mentioned due to the presence of pro-agglutinoids or some other cause. Reactions caused by normal serum or due to diseases other than typhoid fever occur less frequently when the high dilutions are used. In many laboratories one to ten and one to fifty are the dilutions used. A control preparation of a culture of the typhoid bacillus to which no serum is added is also kept under observation.

Certain cases clinically typhoid fever that do not give the Widal reaction are in reality cases of paratyphoid infection. In

these cases the cause of the disease is another bacillus closely related to the typhoid bacillus but not identical with it. The blood serum of a patient the subject of paratyphoid infection would cause agglutination of a culture of the paratyphoid bacillus, but usually not of the typhoid bacillus. It is advisable when the case clinically resembles typhoid fever, but the Widal test continues negative, to make the test also with paratyphoid cultures.

The time during which a reaction may continue to be found in the course of typhoid fever varies. The average period during which agglutination may be obtained when a dilution of one to forty is used is less than a month. Cases are recorded, however, in which the reaction has been found months or years after the disease. Many of these reactions are believed to be due to persistence of the infection in various parts of the body. The gall-bladder is a favorite seat of such latent infections.

As already intimated the intensity of the reaction varies to a considerable degree during the course of the disease. Iverson⁹ made a special study of such variations in the Obuchow Hospital at St. Petersburg during the winter of 1901-02. More than six hundred cases were studied. If no reaction was obtained with a serum diluted one hundred times lower dilutions were prepared, as low even as one to five. If no agglutination was obtained in a one to five preparation, the agglutinating power of the serum was marked zero. If with the one to one hundred dilution a marked reaction was obtained higher dilutions were prepared up to one to twenty thousand. Five to ten sera were examined daily, and the test was repeated every three or four days for each patient.

The cases studied were divided into three groups: I. Simple uncomplicated cases and those showing relapses; II. Fatal cases; III. Mild atypical cases and severe complicated and protracted cases.

I. Mild uncomplicated cases. Twenty-one cases were reported. Complete histories are given with charts showing temperature and agglutination curves. All the cases showed a marked increase in the agglutinating power of the serum at the end of the febrile period, about the twentieth day of the disease. In the first week the agglutinating power was slight and in many cases entirely lacking. At the end of the second week it began to increase and the first part of the third week showed a slight further increase, reached a maximum and fell in the course of

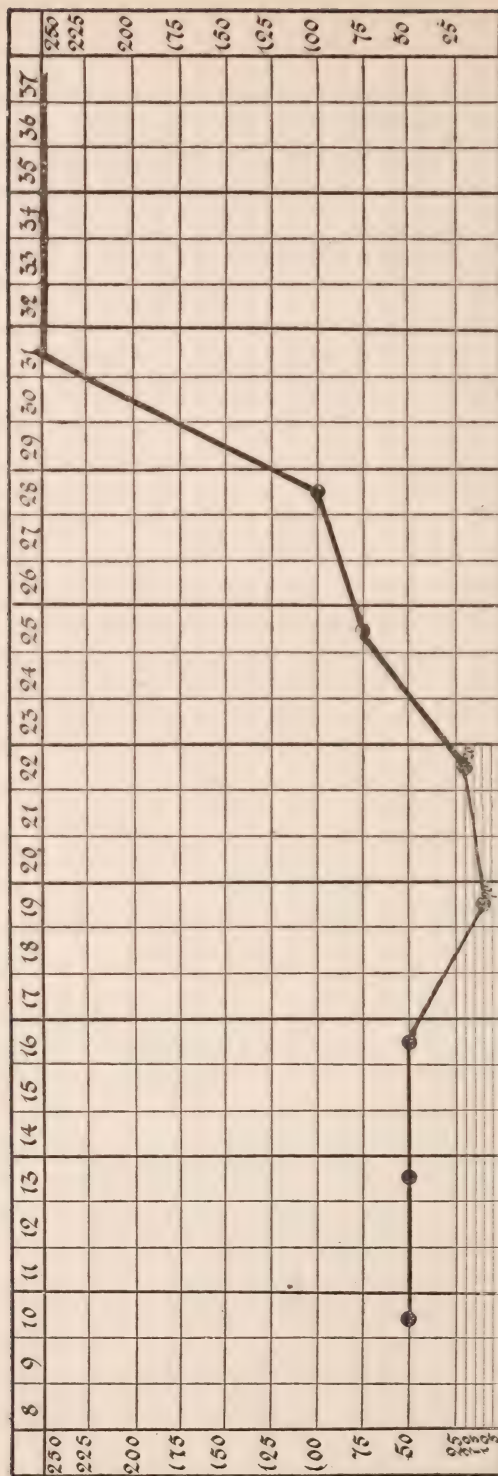


CHART I.—The figures in the horizontal line represent the day of the disease. Those in the vertical line the degree of dilution above which no reaction could be obtained. Note that for five days no reaction could be obtained with a dilution higher than 1 to 25.
(From Iverson.)

three or four days, remaining at a lower level thereafter with a tendency to gradually diminish throughout convalescence. Such a course is represented graphically by the "steep" curve of Courmont.

In the nine cases showing relapse the agglutinating power of the serum could in the majority be represented by a similar curve, but the agglutinating power reached a higher point during the relapse than in the first part of the illness and sometimes appeared first in the relapse, having been entirely absent up to that time.

II. Fatal Cases. These showed a rapidly increasing agglutinating power of the blood serum up to the end, in some cases reaching a strength which produced reactions even in dilutions as high as one to twenty thousand.

These findings are in harmony with those of other observers. Wood⁸ states that in his experience the Widal reaction is absent in not more than one or two per cent. of cases, provided the blood is tested frequently. If, however, only one or two examinations are made the number of positive reactions is much smaller. Boston¹³ says the reaction continues within wide limits from day to day. Simon⁶ states that intermittence of the reaction is common and emphasizes still further the necessity of frequent examinations in apparently negative cases. According to Ewing¹² the reaction may continue without interruption during the course of the disease or may be absent one day and present the next. Longcope¹³ has found in the Pennsylvania Hospital that the agglutination varies a good deal from week to week or even from day to day, and that frequently the same serum does not agglutinate the same organism in the same dilutions two days in succession. Kelly¹⁴ at the German Hospital in Philadelphia has frequently found that a case that gives a positive reaction may very well later in the course of the disease give a negative reaction. It is nothing uncommon in his experience and does not occasion much comment in the hospital. Cole¹⁵ in the Johns Hopkins Hospital has found that the test may be present during the course of the disease and then disappear, and it may again reappear. Jorgensen¹⁶ has found that variations in agglutinating power may occur with great rapidity within a few hours. In the light of this testimony it seems probable that if the Widal test were made at frequent intervals and in proper dilution the reaction would be obtained sooner

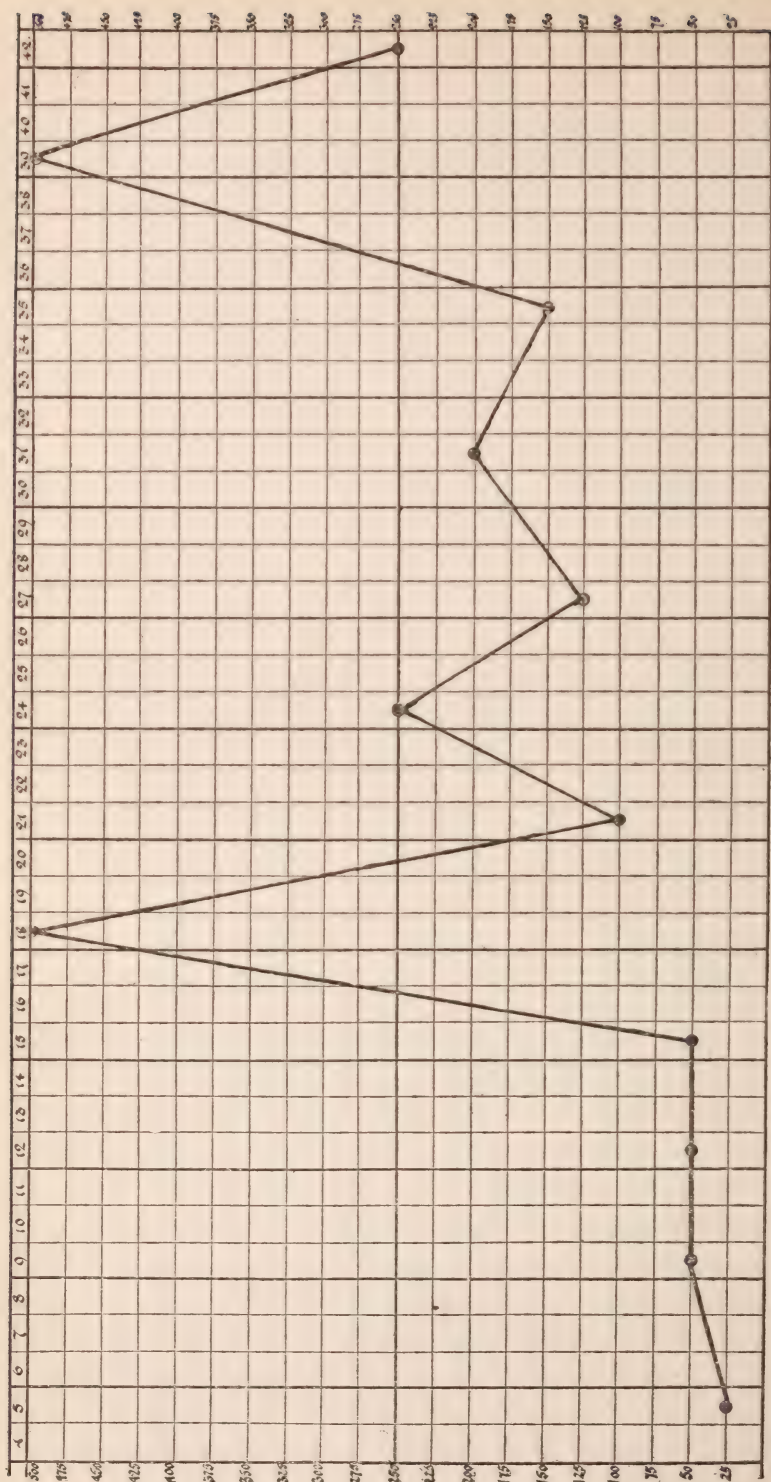


CHART II.—The figures in the horizontal line represent the day of the disease. Those in the vertical line the degree of dilution above which no reaction could be obtained. Note the marked variations in the intensity of agglutination during the course of the disease. (From Iverson.)

or later in practically all cases of typhoid fever, and thus is in a sense a specific reaction. Unfortunately, however, a positive reaction is sometimes obtained when the patient does not have typhoid fever.

Iverson⁹ obtained a positive Widal from the serum of a patient having diphtheria, from one having miliary tuberculosis and from two having pulmonary tuberculosis. In certain of these cases the reaction was obtained even when a dilution of one to two hundred and fifty was used. Ten cases of diseases in which jaundice occurred showed positive reactions. These diseases were croupous pneumonia, hypertrophic cirrhosis of the liver, catarrhal jaundice, Addison's Disease, etc. Cabot¹² reports twenty-five hundred tests of diseases other than typhoid fever; a positive reaction was obtained in two per cent. of the cases studied. Positive Widal's have also been reported by other observers, obtained from patients having malaria, pneumonia, tuberculosis, meningitis, diphtheria and influenza. Even the serum from healthy persons has occasionally caused agglutination of typhoid bacilli. Most of such reactions disappear when a dilution of one to forty or more is used. Many of the positive Widal's reported as obtained in diseases other than typhoid fever, were obtained in low dilutions and may have been due to normal agglutinins which interfere under such circumstances.

The serum from persons who have jaundice has been asserted to possess the property of agglutination to a marked degree. Köhler¹⁷ obtained a positive reaction in a large percentage of cases of jaundice. He, however, used low dilutions. Other observers, Königstein,¹⁸ Libman,¹¹ and Jorgensen,¹⁶ used higher dilutions and were unable to confirm his results. Königstein¹⁸ obtained a positive reaction only once in twenty-one cases of jaundice. Libman¹¹ was unable to obtain a positive reaction in thirty-five of cases of jaundice unassociated with typhoid fever, though he succeeded several times in cases from which typhoid bacilli were isolated. Sailer also obtained negative results. Libman believes that while icteric serum may possess a certain amount of the agglutinating power, there is no proof at the present time that it can produce sufficient agglutination to interfere with our clinical diagnosis. Müller¹⁹ states that in many cases of jaundice in which positive reactions are obtained there is a localized infection of the liver with typhoid bacilli without the occurrence of intestinal lesions. It is a well

known fact that typhoid bacillus may persist a long time in the gall-bladder after the patient has apparently recovered entirely from an attack of typhoid fever.

In conclusion: the Widal test in typhoid fever has limitations. The value of the test is in part dependent on the technique of making it. A suitable culture must be used and the patient's blood serum must be collected and diluted to a certain degree. There are cases of typhoid fever, so far as can be judged from the clinical symptoms, which do not show the reaction. A positive reaction is sometimes obtained in the course of diseases other than typhoid fever or even in health.

The reaction, however, is of undoubted clinical value since it may be obtained in nearly all cases of typhoid fever if the test is repeatedly and carefully made. It can so rarely be obtained from the serum of healthy persons or those suffering from diseases other than typhoid fever that the occasional reactions secured from such persons do not greatly diminish the value of the test. While not pathognomonic, the Widal reaction can certainly be ranked as of equal value with any of the clinical symptoms of typhoid fever.

ARTHUR T. LAIRD.

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Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR NOVEMBER, 1906.

Deaths.

	1902	1903	1904	1905	1906
Consumption	20	18	18	24	13
Typhoid Fever	6	1	1	5	2
Scarlet Fever	0	1	0	0	0
Measles	0	0	0	0	0
Whooping-cough	1	0	0	0	0
Diphtheria and Croup.....	2	3	2	0	3
Grippe	0	3	0	0	0
Diarrheal diseases	0	4	3	4	0
Pneumonia	19	11	10	10	6
Broncho-pneumonia	6	2	0	10	2
Bright's Disease	18	23	19	7	7
Apoplexy	6	9	12	5	10
Cancer	12	14	13	4	3
Accidents and violence.....	8	9	9	16	5
Deaths over 70 years.....	32	32	27	29	15
Deaths under one year.....	14	15	8	21	18
<hr/>					
Total deaths	156	145	131	151	123
Death rate	12.96	17.63	15.93	18.36	14.95
Death rate less non-residents.	17.52	16.66	14.59	15.92	14.10

Deaths in Institutions.

	1902		1903		1904		1905		1906	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital	5	9	8	3	10	7	5	1	9	2
Albany County Jail.....	0	0	0	0	0	0	2	0	0	0
Albany Orphan Asylum.....	0	0	0	1	0	0	1	3	1	0
County House	6	0	2	1	5	0	2	0	7	2
Homeopathic Hospital	0	0	3	1	2	1	1	1	3	0
Hospital for Incurables.....	0	0	0	1	0	0	1	0	0	0
House of Good Shepherd.....	0	0	0	1	0	0	0	0	0	0
Little Sisters of the Poor.....	1	0	0	0	0	0	3	1	1	0
Public Places	0	0	2	0	3	1	1	2	1	0
St. Margaret's Home.....	1	1	0	0	0	0	2	1	0	0
St. Peter's Hospital.....	1	2	4	0	2	2	5	4	5	2
Home for Aged Men.....	0	0	0	0	1	0	0	0	0	0
Child's Hospital	0	0	0	0	0	0	1	1	0	1

Births	75
Marriages	70
Still births.....	3

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

There were one hundred and forty-eight plumbing inspections during the month of January, of which one hundred and three were of old buildings and seventy-five new buildings. There were thirty-three iron drains laid, twenty-nine connections to street sewers, thirty-seven tile drains, three urinals, one cellar drain, thirty-eight cesspools, forty-three wash basins, thirty-eight sinks, forty bath tubs, twenty-nine wash trays, three trap hoppers in yard, and seventy-two tank closets. There were one hundred and twenty-three permits issued, of which one hundred were for plumbing and twenty-three for building purposes. There were twenty-seven plans submitted, of which three were of old buildings and twenty-four for new buildings. Ten houses tested on complaint with the blue, red test and eight water tests were made. Eighteen houses examined on complaint and thirty-three reinspected. Twelve complaints were found valid and six without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1902	1903	1904	1905	1906
Typhoid Fever	4	5	4	7	11
Scarlet Fever	5	7	17	21	6
Diphtheria and Croup.....	48	31	12	16	50
Chickenpox	12	3	16	7	2
Measles	1	2	1	2	0
Whooping-cough	2	1	0	0	0
Consumption	0	0	3	2	1

Contagious Diseases in Relation to Public Schools.

	Reported.		Deaths.	
	D.	S. F.	D.	S. F.
Public School No. 1.....	7	....	....	....
Public School No. 2.....	1	....	....	....
Public School No. 5.....	1	....	....	....
Public School No. 9.....	1	....	....	....
Public School No. 12.....	....	1	....	....
Public School No. 13.....	1	....	....	....
Public School No. 14.....	1	....	....	....
Public School No. 15.....	1	....	....	....
Public School No. 17.....	4	....	1	....
Public School No. 20.....	....	1	....	....
Public School No. 21.....	1	....	....	....
Public School No. 24.....	....	2	....	....
Sacred Heart Academy.....	2	....	....	....

Number of days quarantine for diphtheria:

Longest..... 51 Shortest..... 6 Average..... 19 11/20

Number of days quarantine for scarlet fever:

Longest..... 39 Shortest..... 11 Average..... 29 4/9

Fumigations:

Houses..... 37 Rooms..... 92
 Cases of diphtheria reported..... 49
 Cases of diphtheria in which antitoxin was used..... 45
 Cases of diphtheria in which antitoxin was not used..... 4
 Deaths after use of antitoxin..... 2

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906
Initial positive	32	22	11	12	30
Initial negative	50	54	35	29	40
Release positive	49	14	2	13	40
Release negative	43	19	14	16	45
Failed	8	2	0	0	11

Examination for Tuberculosis.

	1903	1904	1905	1906
Initial positive	2	2	1	8
Initial negative	0	0	1	2

BUREAU OF MILK.

Milk dealers found to be out of business.....	0
Wagons and milk cans in clean condition.....	1
Wagons and milk cans in unclean condition.....	0
Ice on cans.....	0
No ice on cans.....	1
Butter fats below 3%.....	1
Solids below 12%.....	1

The only sample of milk collected this month was found to be deficient in butter fats and solids. The milkman responsible for the low grade of milk has been notified of the standard.

MISCELLANEOUS.

Inspection of mercantile establishments.....	30
Mercantile certificates issued to children.....	39
Factory certificates issued to children.....	18
Children's birth records on file.....	57
Number of written complaints of nuisances made.....	40
Complaints of privy vaults.....	13
Complaints of plumbing.....	15
Miscellaneous complaints	12
Total number of dead animals removed.....	552
Cases assigned to health physicians.....	44
Calls made	176

ABSTRACT OF VITAL STATISTICS FOR DECEMBER, 1906.

Deaths.

	1902	1903	1904	1905	1906
Consumption	14	11	22	23	17
Typhoid Fever	0	3	1	1	2
Scarlet Fever	0	0	3	1	0
Measles	0	0	0	0	0
Whooping-cough	2	0	0	1	0
Grippe	1	1	1	0	2
Diarrheal diseases	1	1	1	0	2
Pneumonia	14	13	15	13	18
Broncho-pneumonia	5	3	7	5	6
Bright's Disease	14	17	17	21	14
Apoplexy	9	9	11	9	4
Cancer	9	11	11	4	9
Accidents and violence.....	9	3	5	4	11
Seventy years and over.....	29	33	21	20	13
Under one year.....	18	10	13	9	11
Total deaths	139	142	151	132	157
Death rate	16.36	16.70	17.77	15.53	18.47
Death rate less non-residents..	15.53	15.41	16.95	14.35	16.83

Deaths in Institutions.

[illegible]

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

There were two hundred and twelve inspections made during the month of January, of which one hundred and twenty-eight were of old buildings and eighty-four of new buildings. There were thirty iron drains laid, thirteen connections to street sewers, seventeen tile drains, ten urinals, thirty-eight cesspools, seventy wash basins, sixty-nine sinks, fifty bath tubs, forty-one wash trays, one hundred and twenty-one tank closets. There were sixty-eight permits issued, of which fifty-four were for plumbing and fourteen for building purposes. There were nine plans submitted of which seven were for old buildings and two of new buildings. Sixteen houses were tested on complaint, eight with blue, red and eight with peppermint tests. There were seven water tests. Fifty-one houses were examined on complaint, of which one hundred and one re-examinations were made. Thirty-one complaints were found to be valid and twenty to be without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1902	1903	1904	1905	1906
Typhoid Fever	8	6	6	2	3
Scarlet Fever	8	7	14	14	14
Diphtheria and Croup.....	25	45	12	10	65
Chickenpox	22	13	23	3	0
Measles	1	29	0	1	2
Whooping-cough	3	0	0	0	0
Consumption	1	0	0	0	2
Totals	69	100	57	30	86

Contagious Diseases in Relation to Public Schools.

	Reported.		Deaths.	
	D.	S.F.	D.	S.F.
Public School No. 1.....	6	....	....	....
Public School No. 2.....	....	1	....	....
Public School No. 4.....	1	....	1	....
Public School No. 6.....	1	3	....	....
Public School No. 13.....	1	....	....	....
Public School No. 14.....	1	1	....	....
Public School No. 15.....	4	....	....	....
Public School No. 17.....	4	....	....	....
Public School No. 20.....	1	1	....	....
Public School No. 21.....	1	....	....	....
Public School No. 22.....	....	1	....	....
Public School No. 25.....	1	....	....	....
Lady Help of Christians.....	1	....	1	....
St. John's School.....	2	....	....	....
St. Ann's School.....	3	....	....	....
St. Francis' School.....	1	....	1	....

Contagious Diseases in Relation to Public Schools—Continued.

Number of days quarantine for diphtheria:				
Longest.....	40	Shortest.....	9	Average..... 20 $\frac{1}{3}$
Number of days quarantine for scarlet fever:				
Longest.....	39	Shortest.....	4	Average..... 21 $\frac{1}{8}$
Fumigations:				
Houses.....	52	Rooms.....	120	Schools..... 4
Cases of diphtheria reported.....				54
Cases of diphtheria in which antitoxin was used.....				51
Cases in which antitoxin was not used.....				3
Deaths after use of antitoxin.....				7

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906
Initial positive	11	31	12	10	43
Initial negative	40	40	24	24	78
Release positive	21	35	3	13	92
Release negative	1	3	8	11	87
Failed .....	.....	.....	.....	.....	11
Totals	110	138	47	58	311

Sputum for Tuberculosis.

	1905	1906
Initial positive	2	4
Initial negative	1	2

MISCELLANEOUS.

Inspections of mercantile establishments.....	0
Mercantile certificates issued to children.....	23
Factory certificates issued to children.....	8
Children's birth records on file.....	31
Number of written complaints made of nuisances.....	33
Privy vaults	5
Plumbing	11
Other miscellaneous complaints.....	17
Total number of dead animals removed.....	403
Cases assigned health physicians.....	71
Calls made	177

ABSTRACTS OF VITAL STATISTICS FOR JANUARY, 1907.

Deaths.

	1903	1904	1905	1906	1907
Consumption	30	14	22	14	16
Typhoid Fever	1	1	1	2	3
Scarlet Fever	2	0	0	0	0
Measles	0	0	0	0	1
Whooping-cough	4	0	1	0	3
Diphtheria and Croup.....	0	1	0	1	4
Grippe	3	2	3	3	4
Diarrheal diseases	10	15	19	17	14
Apoplexy	5	9	14	8	10
Cancer	8	8	9	13	10
Accidents and violence.....	4	3	8	3	5
Deaths over 70 years.....	29	32	41	28	41
Deaths under one year.....	21	20	16	15	11
<hr/>					
Total deaths	153	135	181	145	180
Death rate	18.01	15.89	21.30	17.06	21.18
Death rate less non-residents..	15.18	14.83	20.01	15.77	19.18

Deaths in Institutions.

	1903		1904		1905		1906		1907	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital	5	3	11	4	8	6	7	7	12	4
Albany Orphan Asylum.....	1	0	0	1	0	0	1	0	0	0
County House	3	3	2	0	4	0	1	2	6	0
Child's Hospital	0	0	0	0	1	0	0	0	1	0
Homeopathic Hospital	0	0	0	0	1	0	0	0	1	5
Hospital for Incurables.....	0	0	0	0	1	0	0	0	1	0
Little Sisters of the Poor.....	2	0	1	2	1	0	0	3	5	0
Penitentiary	0	0	0	0	0	0	1	1	0	1
Public Places	1	0	0	0	2	1	2	0	0	1
St. Margaret's Home.....	2	0	1	0	1	0	4	0	1	0
St. Peter's Hospital.....	3	1	4	1	3	3	4	1	3	4
Births at term.....								78		
Marriages								64		
Still births								4		

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were two hundred and twenty-four inspections made during the month of January, of which one hundred and twenty-six were of old buildings and ninety-eight of new buildings. There were thirty-five iron drains laid, three

connections to street sewers, twelve tile drains, three urinals, one latrine, twenty-eight cesspools, forty wash basins, forty-three sinks, thirty-four bath tubs, twenty-eight wash trays, three trap hoppers in yard, sixty-nine tank closets. There were sixty-four permits issued, of which fifty-six were for plumbing and eight for building purposes. There were sixteen plans submitted of which six were of old buildings and ten for new buildings. There were seven houses tested on complaint, one with blue, red, and six with peppermint tests. There were also thirteen water tests made, twenty-six houses were examined on complaint and one hundred and thirty-two re-examined. Nineteen complaints were found to be valid and seven without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1903	1904	1905	1906	1907
Typhoid Fever	8	4	5	4	10
Scarlet Fever	9	5	4	14	13
Diphtheria and Croup.....	14	11	7	9	42
Chickenpox	12	5	8	8	1
Measles	10	1	10	4	10
Whooping-cough	5	2	0	0	0
Consumption	5	0	4	0	3
Totals	63	28	38	39	79

Contagious Diseases in Relation to Public Schools.

	Reported.		Deaths.	
	D.	S. F.	D.	S. F.
Public School No. 1.....	2	....	2	....
Public School No. 14.....	1	....	....	....
Public School No. 15.....	2	....	....	....
Public School No. 17.....	3	1	2	....
Public School No. 20.....	....	1	....	....
Public School No. 21.....	2	....	....	....
Public School No. 25.....	1	1	....	....
Christian Brothers Academy.....	1	....	....	....
Lady Help of Christians.....	....	1	....	....
Cathedral School	2	....	....	....

Number of days quarantine for diphtheria:

Longest..... 68 Shortest..... .. Average..... 27 34/38

Number of days quarantine for scarlet fever:

Longest..... 39 Shortest..... 13 Average..... 22 5/9

Cases of diphtheria reported..... 43

Cases of diphtheria in which antitoxin was used..... 39

Cases of diphtheria in which antitoxin was not used..... 4

Deaths after use of antitoxin..... 4

BUREAU OF MARKETS AND MILK.

Milk dealers found to be out of business.....	2
Wagons and milk cans in clean condition.....	72
Wagons and milk cans in unclean condition.....	0
Ice on cans.....	0
No ice on cans.....	72
Butter fats below 3%.....	2
Butter fats from 3 to 3.5%.....	22
Butter fats from 3.5 to 4%.....	20
Butter fats over 4%.....	20
Solids below 12%.....	10
Solids from 12 to 12.5%.....	14
Solids from 12.5 to 13%.....	24
Solids over 13%.....	24
Meat condemned	58 lbs.

BUREAU OF MILK.

No.	Specific Gravity Per Cent.	BUTTER FATS.				SOLIDS.				
		Under 3%	3 to 3.5%	3.5 to 4%	Over 4%	Under 12%	12 to 12.5%	12.5 to 13%	Over 13%	
2.....	34	..	I	..	..	..	..	I	..	
3.....	33.7	..	..	I	..	..	..	I	..	
4.....	30.6	..	I	..	..	I	..	..	..
5.....	33.7	..	..	I	..	..	..	..	I	
6.....	32.4	..	..	..	I	..	..	..	I	
7.....	33.4	..	..	..	I	..	..	..	I	
8.....	31.5	..	..	..	I	..	..	I	..	
10.....	31.6	..	..	I	..	..	I	..	..
11.....	31	..	I	..	..	..	I	..	..
14.....	33.7	I	..	..	..	I	..	..	..
15.....	33.4	..	..	I	..	..	..	..	I	
16.....	33.7	..	..	..	I	..	..	..	I	
19.....	34	..	I	..	..	..	..	I	..	
20.....	32.3	..	I	..	..	..	I	..	..
21.....	32.8	..	..	I	..	..	..	I	..	
22.....	30.7	..	..	I	..	..	I	..	..
26.....	32.7	..	I	I	..	..	..	I	..	
27.....	31.6	..	..	I	..	..	..	I	..	
28.....	33.6	..	..	..	I	..	..	..	I	
35.....	31.6	..	I	..	..	I	..	..	..
31.....	34.7	..	I	..	..	..	I	..	..
32.....	32.7	..	..	I	..	..	..	I	..	
38.....	33.7	..	..	I	..	..	..	..	I	
40.....	33.7	..	I	..	..	..	I	..	..
41.....	34.5	..	I	..	..	..	..	I	..	
43.....	33.1	..	..	..	I	..	..	..	I	
50.....	30.9	..	I	..	..	I	..	..	..
51.....	32.4	..	..	I	..	..	..	I	..	

BUREAU OF MILK—*Continued.*

No.	Specific Gravity. Per Cent.	BUTTER FATS.				SOLIDS.				
		Under 3%	3 to 3.5%	3.5 to 4%	Over 4%	Under 12%	12 to 12.5%	12.5 to 13%	Over 13%	
52.....	32.7	..	..	I	..	..	..	I	..	
53.....	32.2	..	..	..	I	..	..	..	I	
54.....	32.4	..	..	..	I	..	..	..	I	
55.....	32.7	..	..	I	..	..	..	I	..	
56.....	31.5	..	..	I	..	..	I	..	..
57.....	33.1	..	I	..	..	..	..	I	..	
58.....	31.7	..	..	I	..	..	I	..	..
59.....	33.6	..	..	I	..	..	..	I	..	
60.....	31.7	..	I	..	..	..	I	..	..
61.....	33.6	..	..	..	I	..	..	..	1	
62.....	32.6	..	I	..	..	..	I	..	..
63.....	33.7	..	I	..	..	..	..	I	..	
66.....	33.7	..	I	..	..	..	..	I	..	
67.....	31.6	..	I	..	..	I	..	..	..
69.....	33.6	..	..	I	..	..	..	..	I	
70.....	32.3	..	..	I	..	..	..	I	..	
76.....	33.7	..	..	..	I	..	..	..	I	
77.....	31.4	..	I	..	..	..	I	..	..
82.....	33.7	..	..	..	..	..	..	..	..
83.....	33.6	..	..	..	I	..	..	..	I	
84.....	33.7	..	..	I	..	..	..	I	..	
85.....	31	..	..	I	..	..	I	..	..
86.....	31	..	..	I	..	..	..	I	..	
87.....	31.5	..	..	..	I	..	..	..	I	
88.....	33.8	..	I	..	..	..	..	..	I	
91.....	32.5	..	I	..	..	I	..	..	..
92.....	33.4	..	..	..	I	..	..	..	I	
93.....	32.7	..	..	..	I	..	..	..	I	
94.....	32.7	..	..	I	..	..	..	I	..	
96.....	33.4	..	..	..	I	..	..	..	I	
99.....	33.4	..	..	I	..	..	..	..	I	
101.....	32.6	..	..	..	I	..	..	..	I	
102.....	32.5	..	..	I	..	..	..	I	..	
103.....	33.7	..	..	I	..	..	..	..	I	
104.....	32.7	I	..	..	..	I	..	..	..
108.....	29.9	..	I	..	..	I	..	..	..
111.....	30.1	..	I	..	..	I	..	..	..
112.....	30.6	..	..	..	I	..	..	I	..	
113.....	31.4	..	..	I	..	..	I	..	..
114.....	31.6	..	..	..	I	..	..	..	I	
116.....	32.6	..	..	I	..	..	..	I	..	
118.....	33.1	..	..	..	I	..	..	..	I	
121.....	32.7	..	I	..	..	..	I	..	..
127.....	32.6	..	I	..	..	I	..	..	..

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1903	1904	1905	1906	1907
Initial positive	13	5	6	4	34
Initial negative	8	7	5	35	70
Release positive	52	81	23	3	41
Release negative	9	22	7	9	43
Failed	1	2	0	0	27
Totals	83	117	41	51	215

Examination for Tuberculosis.

	1904	1905	1906	1907
Initial positive	2	2	1	5
Initial negative	2	2	1	2

MISCELLANEOUS.

Inspections of mercantile establishments.....	0
Mercantile certificates issued to children.....	8
Factory certificates issued to children.....	25
Children's birth records on file.....	33
Number of written complaints of nuisances.....	37
Privy vaults	6
Plumbing	11
Other miscellaneous complaints.....	20
Total number of dead animals removed.....	....
Cases assigned health physicians.....	84
Calls made	132

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

A regular meeting of the Society was held in Alumni Hall of the Albany Medical College, January 9, 1907. The following members were present: Drs. Ball, Bartlett, Bedell, A. J., Beilby, Bendell, Blair, Blessing, Bristol, Case, Classen, Craig, Curtis, Devoe, Garlick, George, W. H., Guttman, Hinman, Jenkins, Keens, Laird, Leavy, Lempe, Lipes, Lomax, MacFarlane, McHarg, McKenna, Moore, C. H., Neuman, Newell, O'Leary, Jr., Papin, Sr., Pease, Ryan, Stevenson, Theisen, Traver, Vander Veer, A., Vander Veer, E. A., Vander Veer, J. N., Ward, Wiltse, Winne, C. K., Jr., invited guests and students.

1. *Reading of the minutes of the last meeting.*

The minutes of the last meeting were read by the Secretary. It was moved that the minutes be adopted as read. The motion was seconded and carried.

2. *Reports of officers and committees.*

No reports were received.

3. *Election of members.*

No names were proposed.

4. *Unfinished business.*

5. *New business.*

No unfinished business or new business was brought before the Society.

6. *Scientific program.*

Dr. A. J. BEDELL demonstrated a series of pathological eye specimens.

Professor HENRY L. ELSNER of Syracuse University, Syracuse, N. Y., presented a paper on: "The Evanescence of Physical Signs in Heart Disease."

Dr. WARD moved that the Society give a vote of thanks to Dr. Elsner for his timely, interesting and instructive paper. The Doctor had again demonstrated to us the truth so often lost sight of, that valvular lesions are not so important as structural changes in the wall of the heart. More stress should be laid on grippe as a cause of myocardial disease. Among the cases seen by Dr. Ward there had been a large number in which the weakness of the heart had undoubtedly been caused by that infection. This weakness had been more or less permanent. In certain instances, for a long period of time any considerable exertion was an impossibility. In this connection the recent studies concerning Stokes-Adams disease were of interest. In one case seen by Dr. Ward arterial and venous pulsations were both present but were entirely distinct from one another, and each had its own rate. The bundle of His is almost without question the connecting link transmitting the impulse to contraction from the auricle to the ventricle. Disease of this bundle, "heart block," has been found in practically every case coming to autopsy. Dr. Ward emphasized the unimportance of valvular lesions and of the determination of the boundaries of the heart by percussion, and agreed with Dr. Elsner in laying less stress on physical signs than on rational symptoms. Dilatation of the mitral ring is often temporary and unaccompanied by rational symptoms. From the patient's point of view rational symptoms are infinitely more important than physical signs. Dr. Elsner's points were all well taken.

Dr. WARD's motion was seconded and carried.

Dr. NEUMAN said that he had listened with a great deal of interest to Dr. Elsner's remarks and he felt sure that all present had received light on important points. Facts such as those brought forward by Dr. Elsner cannot be reiterated too often. One point in etiology should be mentioned. The involvement of the heart in young men at college who take an interest in athletics. As a result of athletic contests the heart muscle suffers. At times even with rest, permanent change results. Dilatation may occur. A toxic factor, the use of tobacco, often works together with the factor just mentioned in these cases. Speaking of the evanescence of physical signs Dr. Neuman referred to a case in which heart murmurs were present a long time and then disappeared. A nurse

in the Albany Hospital had typhoid fever. During the attack the myocardium became involved and the patient's condition was critical for weeks. Signs of failing compensation developed. For a long time if compelled to go up and down stairs, rational symptoms presented themselves. She was under treatment for years. As late as six years after her illness Dr. Ward and Dr. Neuman both heard a loud murmur which had constantly been present. Then, on one occasion, the heart murmur was found to have disappeared and did not return. Dr. Neuman was sure that all the members of the Society felt indebted to Dr. Elsner for his address.

Dr. MACFARLANE said that he would not allow the occasion to pass without expressing his thanks to Dr. Elsner for his able and interesting paper. Dr. MacFarlane's attention had been first called to the importance of myocardial disease while reading Oscar Fraenkel's work. Two-thirds of the book being devoted to myocardial lesions and only one-third to valvular affections. The detection of slight myocardial disease was a difficult matter. Such changes could be recognized readily only by expert diagnosticians like Dr. Elsner. The diagnosis of myocardial troubles shows that we are taking up more and more difficult subjects in medicine. The diagnosis is especially difficult in cases of emphysema, the hyperresonant lung masking the physical signs. In cases of enlargement of the heart it is difficult to determine whether the condition of the heart is primary or secondary. The X-ray promises to be of great help in the accurate determination of the boundaries of the heart. At the clinic in Berlin all heart cases are studied by the aid of the X-ray apparatus and photographs are taken. The importance of the bundle of His in heart block had been mentioned. We are evidently now on the borderland of determining the organic conditions underlying bradycardia, tachycardia, etc., and are finding out that many "functional" cases are not functional. Dr. Elsner's experience in "flooding" a patient with digitalis had confirmed Dr. MacFarlane's own observations. In one instance he had given a patient very large doses with most satisfactory results. He reiterated his acknowledgment of the pleasure which he had had in listening to Dr. Elsner's address.

Dr. A. VANDER VEER wished to express his gratitude for the privilege of listening to Dr. Elsner's paper. Surgery to the layman seems to be in the lead and to be in advance of medicine. Dr. Elsner's address showed that medicine was making the same strides. Forty-six years ago Dr. Vander Veer had studied a little manual, Tanner's Practice of Medicine, which gave a clear account of the heart sounds. Later on he had listened to Alonzo Clark, who supported Tanner's views and had heard nothing said about myocardial affections. After practicing for a while he had found that the heart sounds alone were not so important. Certain cases in which there was heart failure following chloroform anaesthesia must have had myocardial lesions. He had learned in intraabdominal operations, in cases where there had been angina, that one must be very careful in handling the stomach and intestines. Cases with tachycardia were difficult of management by the surgeon. Dr. Elsner had given us

points of value in regard to such cases and those in which death from fright occurs. It is very necessary from a surgical standpoint to know the condition of the heart. Physical signs and murmurs, for instance the sounds of the heart in mitral stenosis, do not deter the surgeon as they did thirty years ago. Dr. Vander Veer wished to thank Dr. Elsner very much for his kindness in coming to us.

Dr. E. A. BARTLETT read a paper: "Electro-Therapy from a Physiological Standpoint."

Before reading his paper Dr. Bartlett said that he had been very much interested in Dr. Elsner's remarks. He had often noted cardiac disturbances in connection with the application of electricity, and in certain of these cases the later history indicated that myocardial changes were the cause of them.

Dr. E. A. VANDER VEER read a paper: "Report of Three Months' Surgical Service at the Albany Hospital."

In the discussion of this paper Dr. CURTIS said: "Surgery ceased to be my vocation when I received my diploma. It is now my avocation." It certainly was a very interesting series of cases that Dr. Vander Veer had reported. Dr. Curtis also wished to say a few words regarding another subject. It was not necessary to give Dr. Elsner taffy; he was used to that, as he was well known and appreciated throughout the entire State. His coming here just as Dr. Eveleth had come, showed one way in which the county societies should do good. The mingling of men from different societies was most beneficial. Dr. Curtis himself had recently gone to Troy to speak before the County Society there. Because of his connection with our associated work Dr. Elsner deserved special gratitude. It is an exceedingly fortunate thing that the State Society has become united and well established, not only for social ends, but also for scientific work. We owe a great deal to the Chairman of the State Society's Committee of Unification. Dr. Elsner should feel as much at home here as in Onondaga County.

Dr. ELSNER said that he could not take exception to Dr. Curtis' statement that he should be as much at home here as in Onondaga County. He was glad to be with the Society in the midst of its activities. Dr. Elsner said that no vacation which he had was enjoyed so much as the one he took in the latter part of January to attend the meeting of the State Medical Society in Albany. Albany County has always been loyal to the State Society. Unification had been demanded by the whole State and was not the work of any one man. Dr. Curtis, Dr. Ward, Dr. Vander Veer and all the members present had had an important share in it. He had enjoyed very much his visit to the Albany County Society and he was sure that its members would receive as hearty a welcome in Onondaga County.

Dr. WARD said that he wished to congratulate Dr. Edgar Vander Veer on his paper. In speaking of the operation of strangulated hernia he mentioned the classification given by his old preceptor of the layers of the abdominal wall: first layer, the skin; third layer, the peritoneum;

and the second layer, whatever lay between. Dr. Craig could probably tell us of a dozen or more layers. The paper was certainly an interesting and instructive one.

On motion of Dr. BENDELL the Society adjourned.

ARTHUR T. LAIRD, *Secretary*.

GEORGE GUSTAVE LEMPE, *President*.

Medical News

Edited by Arthur J. Bedell, M. D.

UNIVERSITY DAY.—At a meeting of the board of governors of Union University at the office of Simon W. Rosendale February 12, preliminary arrangements were made for the observance of University day. The date set is March 7 and the exercises will be held in the afternoon at Harmanus Bleecker Hall, Albany. President Andrew V. V. Raymond will preside and the address will be delivered by Dr. Andrew S. Draper. Addresses will also be made by Vice Chancellor St. Clair McKelway, of the State Board of Regents, and Prof. Lewis Boss.

A banquet will be held at the Ten Eyck hotel in the evening. Dr. Raymond will act as toastmaster and it is expected that addresses will be delivered by Governor Hughes, Chancellor McKelway and William H. McElroy, of New York.

The committee arranging the affair consists of the following: Dr. Raymond, Justice Alden Chester, Dr. Samuel B. Ward, General Amasa J. Parker and Frederick W. Cameron.

ALBANY HOSPITAL OFFICERS.—The governors of the Albany Hospital met in February and elected the following officers for the year: President, J. Townsend Lansing; vice-president, Charles R. Knowles; secretary, Gustavus Michaelis; treasurer, Walter Launt Palmer; treasurer of the endowment fund, Dudley Olcott; executive committee, Isaac D. F. Lansing, Dr. Albert Vander Veer, with the other officers-elect.

SOUTH END DISPENSARY.—At the annual meeting of the South End Dispensary, the following officers were elected: President, Charles Gibson; vice-president, John H. Jackson; secretary, Dr. Leo H. Neuman; treasurer, Dr. W. G. Macdonald.

THE ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR JANUARY, 1907.—Number of new cases, 133; *classified as follows*: Dispensary patients receiving home care, 2; district cases reported by health physicians, 13; charity cases reported by other physicians, 55; patients of limited means, 63; old cases still under treatment, 76; total number of patients under nursing care during the month, 209. *Classification of diseases* (new cases): Medical, 43; surgical, 4; gynecological, 2; obstetrical, 39 mothers and 40 infants under professional care; dental, 4; eye and ear, 1; transferred to hospitals, 4; deaths, 10.

Special Obstetrical Department—Number of obstetricians in charge of cases, 1; medical students in attendance, 1; cases, 1; number of visits by attending obstetricians, 2; by the medical students, 2; total number of visits for this department, 4.

Visits of Guild Nurses (all departments): Number of visits with nursing treatment, 1,681; for professional supervision of convalescents, 325; total number of visits, 2,006. Six graduate nurses and 5 assistant nurses were on duty. Cases were called to the Guild by 4 of the health physicians and by 45 other physicians and by 4 dentists.

CIVIL SERVICE EXAMINATIONS FOR THE STATE AND COUNTY SERVICE.—The State Civil Service Commission will hold examinations March 16, 1907, for the following positions: Assistant actuary, \$3,600, and chief examiner, \$5,000, in the insurance department; assistant inspector of gas, \$1,000 to \$1,200; food inspector, department of agriculture, \$1,200 to \$1,500; page, State and county offices, \$360; guard, State prisons and reformatories, \$660; Sloyd instructor, State institutions, \$600 to \$720 and maintenance.

The last day for filing applications for these positions is March 11th. Full information and application forms for any of these examinations may be obtained by addressing the chief examiner of the commission at Albany. Charles S. Fowler, chief examiner.

TREASURY DEPARTMENT.—BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.—A board of officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B street S.E., Washington, D. C., Monday, April 15, 1907, at 10 o'clock A. M., for the purpose of examining candidates for admission to the grade of assistant surgeon in the public health and marine-hospital service.

Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: 1, physical; 2, oral; 3, written; 4, clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination of the various branches of medicine, surgery, and hygiene.

The oral examination includes subjects of preliminary education, history, literature, and natural sciences.

The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operation on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

Upon appointment the young officers are, as a rule, first assigned to

duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco.

After five years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon.

Promotion to the grade of surgeon is made according to seniority, and after due examination as vacancies occur in that grade.

Assistant surgeons receive \$1,600, passed assistant surgeons \$2,000, and surgeons \$2,500 a year. When quarters are not provided, commutation at the rate of thirty, forty, and fifty dollars a month, according to grade, is allowed.

All grades above that of assistant surgeon receive longevity pay, 10 per cent. in addition to the regular salary for every five years' service up to 40 per cent. after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses.

For further information, or for invitation to appear before the board of examiners, address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."

ARMY MEDICAL CORPS EXAMINATIONS.—Preliminary examinations for appointment of assistant surgeons in the army will be held on April 29 and July 29, 1907, at points to be hereafter designated.

Permission to appear for examination can be obtained upon application to the surgeon general, U. S. army, Washington, D. C., from whom full information concerning the examination can be procured. The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice. The examinations will be held concurrently throughout the country at points where boards can be convened. Due consideration will be given to the localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

In order to perfect all necessary arrangements for the examinations of April 29th, applications must be complete and in possession of the surgeon general on or before April 1st. Early attention is therefore enjoined upon all intending applicants.

There are at present twenty-five vacancies in the medical corps of the army.

NEW YORK STATE COMMISSION TO INVESTIGATE THE CONDITION OF THE BLIND.—The loss of sight in the case of an individual is of economic importance to the State. The New York State Commission to Investigate the Condition of the Blind has been charged, therefore, by the Legislature with the duty of inquiring into the causes of blindness, and of recommending methods by which, as far as possible, unnecessary blindness may be prevented. To that end the commission begs the assistance

and advice of the medical profession. The secretary will gratefully receive and acknowledge any reprints, reports, pamphlets—or personal communications bearing on the causes and prevention of blindness.

More especially information is sought on the following points:

Congenital Blindness—Its causes, the influence of heredity, consanguinity, etc. The reports of cases of blind parents producing blind children, character of blindness in such cases, etc.

Ophthalmia Neonatorum—How generally are preventive measures employed? Statistics bearing on the subject. What silver salt and in what strength should be recommended?

Trachoma and Other Infectious Eye Diseases—Statistics. How may early treatment be secured? Prevalence in schools, orphan asylums, etc. Preventive measures—medical inspection of schools.

Blindness from Accident, Injuries, Fireworks, Toy-pistols, etc.—Statistics. Method of protection for eyes of workmen, and others. Prohibition of dangerous explosives at celebrations.

Toxic Amblyopia—From methyl alcohol—other toxic agents. How may the public be protected?

Neglect on the Part of Patients Visiting Dispensaries—Patients suffering from conditions threatening vision absent themselves from clinics after being advised of the need of immediate treatment until too late. Method of reaching such.

Blindness Due to Neglect of Slight Ophthalmic Injuries—How can early treatment be more generally secured?

Blindness Due to Improper Hygiene and Sanitation in Corneal Troubles of Children—How can early treatment be secured?

Other Causes of Blindness—Suggestions as to prevention.

The Commission will be most grateful for advice and assistance on the above subjects. F. Park Lewis, President, 454 Franklin street, Buffalo; O. H. Burritt, Secretary, Batavia.

PENNSYLVANIA RAISES THE REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOL.—Recognizing the advantages of a broader general education and the growing necessity of the prospective student having in addition special preparation for the study of medicine, the board of trustees of the University of Pennsylvania has decided recently to raise the requirements for admission to its medical school. These requirements include two years of general college training and in addition a certain knowledge of biology, chemistry and physics. According to the plan which has been adopted, the standard will be raised gradually, beginning with the academic year 1908-1909 and reaching the maximum 1910-1911.

AMERICAN JOURNAL OF DERMATOLOGY AND GENITO-URINARY DISEASES.—Announcement is made of increase in size of this journal with more pages of reading matter and several new departments.

THE THERAPEUTIC GAZETTE.—This journal has absorbed the *Medical Age and Medicine* and is now published at Detroit, Mich.

THE QUARTERLY JOURNAL OF INEBRIETY.—*The Journal of Inebriety* after thirty years of continuous studies of the disease of inebriety and

drug taking begins its new decade by entering upon comparatively new field of physiological and psychological therapeutics, for the treatment of these neurosis. Arrangements have been completed by which *The Archives of Physiological Therapy* has been consolidated and will hereafter be published as a part of *The Journal of Inebriety*. This very able monthly has been developing parallel lines of study with *The Journal of Inebriety*. In the opinion of its managers its scientific value would be greatly enlarged by concentrating its work along some special lines. The disease of inebriety and its allied neuroses is a field of most practical interest, hence *The Journal of Inebriety* is selected as a medium for continuing the work of *The Archives of Physiological Therapy*.

Henceforth in addition to the various phases of this subject which *The Journal* has presented, the therapeutic effects of hot air, radiant light baths, electricity, massage, psycho-therapeutic measures and other physiological means will occupy a prominent space. This effort to clear away the confusion and broaden the studies of therapeutic means for cure, will make *The Journal of Inebriety* one of the most practical and valuable visitors to every hospital and institution, as well as to all specialists who treat brain and nerve neurotics. It will aim to present and formulate the latest studies and facts along these frontier lines, and in this way lift the whole field of therapeutics out of its present empiric stage into one of rational therapeutics.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.—At the last meeting of the Mississippi Valley Medical Association it was decided to offer a prize of \$100 for the best essay on some medical or surgical subject.

The competition is to be limited to those who, at the time of entering the competition as well as at the time of the award, shall be members in good standing of the Mississippi Valley Medical Association.

The award will be made by a committee appointed for the purpose, consisting of Drs. Hugh T. Patrick of Chicago, A. H. Cordier of Kansas City, and Chas. H. Hughes of St. Louis. The name of the author is to be enclosed in a sealed envelope bearing some motto or device and the essay is to be marked by the same motto or device. The name of the successful author and the title of his essay will be announced at the next meeting of the association to be held in Columbus, Ohio, October 8, 9, 10, 1907, and the award will be made at that time. The successful essayist will be notified at least two weeks prior to the meeting, and he will be expected to read his essay at that meeting. The essay is to be published in the organ of the association.

All essays must be typewritten, and are to be sent to the secretary, Dr. Henry Enos Tuley, 111 W. Kentucky street, Louisville, Ky., on or before August 1, 1907, after which date no essay will be received.

The committee reserves the right to reject any or all essays.

THE WOMEN'S MEDICAL ASSOCIATION OF NEW YORK CITY desires to pay a permanent tribute to the memory of Dr. Mary Putnam Jacobi, by establishing in her name a fellowship, which shall be known as the Mary Putnam Jacobi Fellowship.

Dr. Jacobi's interests were broad and numerous. She lent her influence and gave freely of her time to many movements for advancing the educational, economic and legal status of women. Among these were The League for the Political Education of Women, The Consumers' League, The Equal Suffrage Association.

In her special domain, that of medicine, she won an international reputation and recognition as a woman physician by opening the École de Médecine of Paris to women medical students. She did pioneer work in gaining admittance to a number of medical societies, thus establishing a precedent for other women. As Professor of Materia Medica and Therapeutics in the Women's Medical College of the New York Infirmary, she was an honor to the institution and an inspiration to her students.

Her unusual spirit of helpfulness which led her to seek every opportunity for women in medicine, seemed to make it especially appropriate that a permanent tribute to her memory should be along these lines. This particular form of endowment was decided upon partially in view of the fact that Dr. Jacobi herself felt most keenly the meagre and unequal opportunities for women in post-graduate hospital work.

It is planned that the appropriation of this fund shall be as broad in its scope as possible. Any properly qualified woman graduate of medicine from an American medical school shall be considered eligible for the fellowship. The details as to the final award will be in the hands of a special committee. To have an adequate income it is necessary that the sum of twenty-five thousand dollars be raised.

BOSTON'S RULES TO PREVENT CONSUMPTION.—In Boston they have taken up the fight against consumption in good earnest. Recently the mayor issued the following order:

To the Heads of Departments.—In the interest of the public service, I hereby promulgate the following order with the object of eliminating and preventing tuberculosis among the employees of the city of Boston:

It shall be the duty of the head of each department to transmit to all employees under his control the accompanying rules and information to prevent the spread of tuberculosis and to require the display of these rules in such manner and in such number as is necessary to carry out their intent.

It is hereby required of each department to ascertain from time to time the names of persons in service in said department afflicted with tuberculosis, and to present to them the printed rules for their observance.

The non-observance of said rules shall, in the discretion of the head of the department, be considered a just cause for separation from the service.

Whenever there is a doubt with regard to any person in the city service as to whether said person is afflicted with pulmonary tuberculosis, an order shall be issued by the head of the department for said person to present himself (or herself) at one of the city hospitals for examination, and to present the department a certificate from the

superintendent or other authorized officer of the said hospital showing the result of said examination.

The board of health is hereby directed to cause a thorough sanitary inspection of the public buildings and workshops under the various city departments; and said Board is authorized to detail from its respective medical services a sanitary board, or boards, for this purpose. The sanitary board thus appointed shall report upon:

First.—Unsanitary conditions immediately remediable.

Second.—Unsanitary conditions requiring structural changes.

The said board when entering upon its duties in any department shall report to the executive head of said building or workshop, who shall, on the request of the board, give such assistance as may be required.

The sanitary board shall make reports to the board of health, and said board of health shall transmit a full report with recommendations to the mayor.

These duties to be additional to, and not to take precedence of, the duties of the board of health prescribed by ordinance.

REGULATIONS TO PREVENT THE SPREAD OF TUBERCULOSIS IN MUNICIPAL BUILDINGS, OFFICES AND WORKSHOPS.

1. All employees of the city of Boston are positively forbidden to spit upon the floors.

2. Rooms, hallways, corridors and lavatories shall be freely aired and effectually cleaned at least once a day, and not during working hours.

3. Spittoons shall receive a daily cleansing with very hot water, and when placed ready for use must contain a small quantity of water.

4. Dust must be removed as completely as possible by means of dampened cloths or mops. It should never be needlessly stirred up by a broom or duster, as this practice only spreads the dust and germs.

5. Floors of tiling, brick or stone must be frequently scoured with soap and water.

6. The senior clerks in charge of workrooms shall take measures to secure during working hours the admission of as much fresh air and sunshine as the conditions will permit.

7. The use of individual drinking glasses is recommended.

8. Persons in employ of the city of Boston who suffer from pulmonary tuberculosis shall be separated when possible from others while at work, and they should be cautioned to use telephones only when necessary.

9. Such persons will not be permitted to use the public spittoons, but must provide themselves with individual sputum receivers preferably of easily destructible material, and carry these with them on arrival and departure. They will be held strictly responsible for the disposal and destruction of their own sputum, so that no other person's health may be endangered therefrom.

10. Such persons must provide their own drinking glasses, soap and towels, and shall not use those provided for the general use.

11. Plainly printed notices, reading as follows: "Do not spit on the floor, to do so may spread disease," shall be prominently posted in rooms, hallways, corridors and lavatories of public buildings.

This order suggests that in this State there are many cities and towns where it would be worth while to issue similar rules.

DR. WILEY'S NEW BOOKS.—Timeliness of interest, aside from any other condition, lends especial importance to the announcement of the early publication of "Foods and Their Adulterations," by Harvey W. Wiley, M. D., to be immediately followed by a companion volume, "Beverages and Their Adulterations." Dr. Wiley is chief chemist to the United States Department of Agriculture, at Washington, and his wide researches in the interests of purity in food commodities give anything he might write on the subject an authoritativeness that is unquestioned. The fact that the new National Food and Drugs Law became effective after January 1st, and that public interest in it is now at white heat, will no doubt result in quite a demand for both volumes. The books will be generously illustrated from original photographs and drawings.

ENGAGEMENT.—The engagement is announced of Dr. ADELBERT S. DEDERICK (A. M. C., '06) of Troy, N. Y., and Miss Sarah E. Garrett, of Newtonville, N. Y.

MARRIED.—DR. J. M. BODDY (A. M. C., '05) and Miss E. Gertrude Davis were married in Albany, N. Y., October 8, 1906. Dr. and Mrs. Boddy will live in Little Rock, Ark.

PERSONALS.—DR. JACOB F. FORCE (A. M. C., '71) has removed to 651 S. Pasadena avenue, Pasadena, California, from Minneapolis.

—DR. JOHN S. NEWCOMB (A. M. C., '88) is in practice at Everett, Wash. He is secretary of the Snohomish Medical Society.

DEATHS.—SAMUEL JAY McDUGALL, M. D., M. M. S. S., died in Boston, February 8, 1907, aged seventy-six years. Dr. McDougall was born in Albany, N. Y., in 1830, and was graduated from the Albany Medical College in 1857. He was a pioneer in the formation of medical societies, and it was largely through his efforts that the Massachusetts Dental Society was organized in 1864.

—DR. GEORGE H. THOMA (A. M. C., '64) of Reno, Nevada, died January 31, 1907, at his home, from meningitis.

—DR. JOHN N. WRIGHT (A. M. C., '68) died at Grand Gorge, N. Y., December 21, 1906.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS.

Gall-Stones and Their Surgical Treatment. By B. G. A. MOYNIHAN, M. S., (Lond.), F. R. C. S. Second edition, revised and enlarged. Philadelphia and London: W. B. Saunders and Company, 1905.

This volume presents in an attractive form the results of the author's long and varied experience in the treatment of gall stone disease, supplemented by interesting facts and observations drawn from the study and writings of other surgeons and pathologists. The volume contains 458 pages of subject matter, which is subdivided into twelve chapters. The first chapter presents a concise description of the anatomy of the gall bladder and ducts, while in the second the congenital abnormalities are described in more or less detail. This is an important feature, for that congenital abnormalities do occur with not very great infrequency is the experience of those who have operated much for gall stone disease.

In chapter three the origin and varieties of gall stones are described, and especial emphasis is laid on the fact that gall stones practically never originate without the association and assistance of bacteria.

The general pathology of gall stone disease is the subject of the fourth chapter, all of the pathological features, from simple inflammation to malignant disease, being discussed.

Chapters five and six deal with the symptoms, general and special, of gall stone disease, an attempt being made to present the symptoms characteristic of stone in the different portions of the biliary apparatus.

Chapter seven presents the remote consequences of gall stone disease, of which biliary fistula and their complications are the most important; the worst of these complications being perforation of the gall bladder into the peritoneal cavity, and intestinal obstruction due to gall stones, which form the subject-matter of chapter eight and nine.

In chapter ten the author describes in detail the preparation for operations upon patients suffering from gall stones. He states that he has been criticised in some quarters for including this chapter in the work, but it would seem to be eminently proper that it should be included.

The closing chapters are devoted to a description of the operations upon the gall bladder and the bile ducts, with especial attention to the operations for obstruction of the common duct.

The volume is very attractively put together and well illustrated, and is in every way a credit to author and publisher. Now that there has come to be such a demand for volumes devoted to the special departments of surgery, it is quite fitting that gall stones should receive the consideration which their great frequency entitles them to. To anyone interested in this subject, and especially to the surgeon who wanders into that domain, this work will be especially acceptable.

A. W. E.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of GUSTAVUS P. HEAD, M. D. *Volume IX. Anatomy, Physiology, Pathology, Dictionary.* Edited by W. A. EVANS, M. S., M. D., ADOLPH GEHRMANN, M. D., WILLIAM HEALY, A. B., M. D. Series 1906. Chicago: The Year Book Publishers, 40 Dearborn Street.

The publishers state that the present volume is one of a series of ten issued at about monthly intervals and covering the entire field of medicine and surgery, each volume being complete for the year prior to its publication on the subject of which it treats. They further state that the series is published primarily for the general practitioner, at the same time the arrangement in several volumes enables those interested in special subjects to buy only the parts they desire.

The present volume is divided into five sections, viz., Anatomy, Physiology, Pathology, Bacteriology and a Dictionary of new medical words. In addition there is appended to the section on bacteriology, a discussion of new diagnostic methods. The book is furnished with a good index and is an excellent work of its kind.

J. M. B.

A Text-Book on the Practice of Gynecology. For Practitioners and Students. By W. EASTERLY ASHTON, M. D., LL. D., Professor of Gynecology in the Medico-Chirurgical College of Philadelphia. Third Edition, Thoroughly Revised. Octavo of 1096 pages, with 1057 original line drawings. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$6.50 net; Half Morocco, \$7.50 net.

In the preface to this edition the author states that the fact that a third edition of this work is called for in one year after the original publication, is most gratifying to him. In the revision of this work he has represented his own views at the present time, based upon an actual working knowledge of the advances that have been made in gynecology and abdominal surgery. In order to keep up with these advances it has been necessary to make many alterations in both text and illustration.

A review of the first edition of this book may be found in the August number of the ANNALS for the year 1905. In this review certain minor criticisms were made and these same criticisms may be made of the present volume. The author wishes to leave "nothing to the imagination and common sense of his readers," and this has led to repetition and attention to details both in the text and illustrations, which have added greatly to the size of the volume. Also the distribution of the illustrations is not as even as it should be; a subject of minor importance may be most profusely illustrated, see vaginal cysts, while one of great importance may be sparingly illustrated, see cancer of the uterus. It is also difficult from the author's treatment of the various subjects to determine their true and relative importance.

This book can be recommended to the student or practitioner who wishes a text-book of gynecology in which there may be found not only the clinical manifestations of gynecological diseases, and their diagnosis, but also explicit directions both in text and in excellent illustrations for the treatment of these conditions. The appearance of three editions in so short a time shows that many appreciate just such a book as this.

J. A. S.

The Practical Medicine Series, Comprising Ten Volumes on the Year's Progress in Medicine and Surgery, under the general Editorial Charge of GUSTAVUS P. HEAD, M. D., Professor of Laryngology and Rhinology, Chicago Postgraduate Medical School. Vol. VI. *General Medicine*, Edited by FRANK BILLINGS, M. S., M. D., Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago, and J. H. SALISBURY, M. D., Professor of Medicine, Chicago Clinical School. Series of 1906. The Year Book Publishers, Chicago. Small octavo, cloth, price \$1.25. (Price of series of ten volumes, \$10).

This volume is the second in the series which is devoted to subjects in the realm of internal medicine. The subjects here considered are certain infectious diseases such as Typhoid, Malaria, Yellow Fever, Relapsing and Malta Fevers, Dysentery and Beriberi, Diseases of the Digestive Tract and of the Abdominal Organs.

The discussion of the various subjects is full, and well abstracts the literature of the year. The sections on typhoid fever, diseases of the stomach and diseases of the intestines are especially full.

Taken with Vol. I of the series, the year's literature on Internal Medicine is well covered.

C. W. K., JR.

Prevalent Diseases of the Eye. By SAMUEL THEOBALD, M. D., Clinical Professor of Ophthalmology and Otology, Johns Hopkins University. Octavo of 551 pages, with 219 text-illustrations, and 10 colored plates. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$4.50 net; Half Morocco, \$5.50 net.

The general practitioner of medicine, in this specializing age, is entitled to a great deal of respect. If his professional work is to be a fit exponent of present knowledge of the science and art of healing, he must possess some very praiseworthy qualities. The specialist in medicine and surgery has abundant opportunity to know the truths that have just been stated. In view of these facts, Dr. Theobald's book on prevalent eye diseases has a laudable purpose. As stated in the preface, it is to bring ophthalmology within the reach of the general practitioner, as well as that can be done by a book. To write a treatise which can do that, requires, on the author's part, the possession of much discriminating ability. Circumstantial evidence alone, if we had no better, would lead to the conclusion that Dr. Theobald is the proper person to undertake the preparation of such a work. Johns Hopkins' medical

department, where he is professor of ophthalmology, has been thought, by many qualified judges, to rank very high, if not even first, among institutions of its class. His position in the American Ophthalmological Society, of which his presidency has been delayed longer than the present writer expected, shows the high esteem in which American ophthalmologists hold him. It is fair to assume that Dr. Theobald knows as well as anybody how to dose the subject of his special study, in order to meet the requirements of the patient, prospective consumer. The latter must feel that he's getting at last all that's his when he finds the frontispiece a chromolithograph of an ocular fundus affected by miliary chorioidoretinitis. Question whether so much, at the very shores, would lure him on to greater depths or scare him from further venture. The book furnishes what is best calculated to serve the reader for whom it is avowedly written. It reads agreeably to one who recognizes in it the sensible style and method that characterize the author's monographs and oral discussions, generally. However faint may be the praise constituted by the statement, the present reviewer has learned from the book what has beneficially modified his practice and recording of cases.

As a publisher's product, the work is very acceptable, well printed, on good paper, and excellently bound. As a guide in differential diagnosis, the colored plates, representing typical appearances of the most important eye diseases, may be *very* valuable to the general practitioner or medical student.

C. M. C.

Syllabus of Lectures in Embryology. By WALTER PORTER MANTON, M. D., Professor of Clinical Gynecology and Professor Adjunct of Obstetrics in the Detroit College of Medicine, etc. Third Edition, Revised and Enlarged. Philadelphia: F. A. Davis Company, 1906.

This book of 136 pages and 69 illustrations is intended as an introduction to the study of obstetrics and gynecology. The principal facts in human embryology are presented, and the book is interleaved with blank pages in order that additional notes may be added.

The work is divided into nine Lectures: 1. Introduction. 2. Anatomy of the Female Organs of Generation. 3. The Spermatozoön, Spermatogenesis; the Ovum, Oögenesis, Menstruation. 4. The General Development of the Embryo. 5. The Uterine and Foetal Membranes, the Placenta and Utero-Placental Circulation. 6. The Development of Special Organs and Parts, the Heart, Blood-vessels and Blood. 7. General Consideration of the Child at Birth. 8. Changes in the Maternal Organism Incident to Pregnancy. 9. Practical Work; and finally, "A Glossary of Some of the Words and Terms used in Embryology," and an Index. The general arrangement presented is that which the author has used in his lectures for the past ten years.

In the section on practical work, the technique and methods of preparing, cutting, staining, etc., material for embryological study, are given.

To the student or practitioner, who wishes a working outline in human embryology in which the principal facts may be found, this book can be recommended.

J. A. S.

Essentials of Genito-Urinary and Venereal Diseases. By S. S. WILCOX, M. D. Saunder's Question Compend. Philadelphia, 1906.

The book forms one of a series of question compends and is arranged in the form of question and answer. The subject matter includes the functional and surgical conditions of the genito-urinary tract, gonorrhoea and syphilis. The various subjects are treated superficially and incompletely and the illustrations are poor. The book has very little value except for a quick review at examination.

H. W. C.

The Practice of Pediatrics in Original Contributions by American and English Authors. Edited by WALTER LESTER CARR, A. M., M. D. Illustrated with 199 engravings and 32 full-page plates. Lea Brothers & Co., Philadelphia and New York, 1906.

Soranus of Ephesus says that the subject of the rearing of children is comprehensive and many sided. If that was true many centuries ago it is much more applicable in these days when infantile therapeutics has become a special science. Text books, monographs, and treatises confined to this particular branch are published with such frequency that it is impossible for even the specialist to become familiar with all pediatric literature.

The present volume consists of articles written by some of the well known younger authorities in children's diseases. It is ably edited by Dr. Walter Lester Carr. Its scope is somewhat similar to that of the monumental work of Keating. Unfortunately it is not complete or comprehensive enough to become the successor of Keating as an encyclopedia and even some of the sections are not as fully elaborated as those in several of the best known less pretentious books.

This is one of a series published by Lea Brothers and Company of Philadelphia, called the "Practitioners' Library." The first section on diseases and injuries of the new born could better have been placed in a work on obstetrics, or at least be condensed into less than forty-four pages. This section deals almost entirely with conditions met with at the time of birth.

Dr. Southworth has added very materially to the practical value of this volume in his section on "Infant Feeding." Rarely does one find a clearer, saner, and more practical exposition of the subject. His remarks on maternal feeding should be read by every practitioner. The average physician deprives the infant of its rightful heritage on very slight provocation. Southworth preaches the gospel of maternal nursing.

Bovaird has written a very excellent chapter on "Diseases of the Alimentary Tract" which is readable and decidedly practical. The chapter on "Infectious Diseases" is also to be commended.

Most of the articles are too condensed. For instance the diseases of the blood, lymphatic system and glands, Addison's disease, cretinism and diabetes are all described in about forty pages, while the whole field of skin diseases, so frequent and important in childhood, is covered in twenty-two pages.

There are a number of colored plates which do not reflect much credit upon the publishers. The ones on the infectious diseases and skin diseases are very poor. The original plate of Koplik's, showing the well known Koplik spots, has been rendered very confusing by the addition of a figure purporting to show the spots in the buccal cavity which looks more like a case of herpetic stomatitis.

The work is not exhaustive enough to be satisfactory as a book of reference, but it contains many valuable articles which should commend it to the busy general practitioner.

H. L. K. S.

Saunders' Pocket Medical Formulary. By WILLIAM M. POWELL, M. D., author of "Essentials of Diseases of Children"; Member of Philadelphia Pathologic Society. Containing 1831 formulas from the best known authorities. With an appendix containing Posologic Tables, Formulas and Doses for Hypodermic Medication, Poisons and their Antidotes, Diameters of the Female Pelvis and Fetal Head, Obstetric Table, Diet-lists, Materials and Drugs used in Antiseptic Surgery, Treatment of Asphyxia from Drowning, Surgical Remembrancer, Tables of Incompatibles, Eruptive Fevers., etc. *Eighth Edition, Adapted to the New (1905) Pharmacopœia.* Philadelphia and London: W. B. Saunders Company, 1906. In flexible morocco, with side index, wallet and flap. \$1.75 net.

This book, as its name implies, is largely made up of prescriptions, arranged alphabetically according to the disease for treatment of which they are intended. Many of them are excellent, having been culled from the private prescription books of many authorities, but some of them are so simple and represent methods of such universal use that they could well have been omitted. We question, too, the value of a collection of prescriptions of this kind. The practitioner should know methods and principles which may be variously applied to different patients as needed, and should not confine his knowledge of therapeutics to the memorizing of stock formulae.

The book contains also a large dose table in both the apothecaries' and metric systems, comparative tables of weights and measures, and various other tables containing valuable information in condensed space.

Not the least important feature is the "Surgical Remembrancer" containing about twenty pages of surgical axioms. All of them are important, many of them are too often overlooked or forgotten especially by surgical dressers, hospital internes or young practitioners. Older practitioners are not blameless in this respect.

The diet-list is good, but might be made larger with advantage.

As a whole the little book contains much good advice and valuable information in a form well suited for ready reference.

C. K. W., JR.

The Practitioners' Visiting List for 1907. An invaluable pocket-sized book containing memoranda and data important for every physician, and ruled blanks for recording every detail of practice. The Weekly, Monthly and 30-Patient Perpetual contain 32 pages of data and 160 pages of classified blanks. The 60-patient Perpetual consists of 256 pages of blanks alone. Each in one wallet-shaped book, bound in flexible leather, with flap and pocket, pencil and rubber, and calendar for two years. Price by mail, postpaid, to any address, \$1.25. Thumb-letter index, 25 cents extra. Descriptive circular showing the several styles sent on request. Lea Brothers & Co., Publishers, Philadelphia and New York, 1906.

PSYCHIATRY.

Edited by G. Alder Blumer, M. D.

Amaurotic Family Idiocy and Family Cerebellar Ataxia of Childhood.
(*Familiäre paralytisch-amaurotische Idiotie und familiäre Kleinhirntaxie des Kindesalters*).

H. HIGIER. *Deutsche Zeitschrift für Nervenheilkunde*, xxxi Band, 3-4 Heft, 26 November, 1906.

The author observed in one family two children with genuine optic atrophy, and two children presenting, each, a peculiar symptom-complex, leading to conclusions as to the relations of certain degenerative conditions. The parents were healthy. The older child, a girl, was normal until the fourth year. Then speech became thick and unintelligible, the gait uncertain and clumsy, the movements of the hands and arms slow and uncertain, the sight weak, and mental development was arrested. Later, movements of the lower limbs became uncertain and spastic, motion generally was seriously implicated; on strong effort the disturbance of coördination was characteristic of cerebellar as well as of spinal source and intention tremor was general. There was no disorder of sensation, and electrical excitability remained normal. The diagnosis involved consideration of an abnormal form of infantile focal sclerosis, the pure form of Friedreich's disease, the pure form of cerebellar atrophy, cerebral spastic diplegia and Marie's hereditary cerebellar ataxy. The last-named disease appeared to be best represented from the spontaneous inception in early childhood, the chronicity and progressiveness of the disease, the absence of sensory disturbance, the difficulty of articulation, incoördination of the extremities, optic atrophy, nystagmus, increased tendon reflexes and idiocy.

The other case, a brother, was normally developed until the seventh month. He then lost flesh, became apathetic and motionless and was unable to hold the head erect. The muscles became flaccid, the reflexes were increased and Babinski's sign was marked. The pupils responded normally, there was no ocular palsy or nystagmus, vision was apparently

defective, with distinct optic atrophy, and in the region of the macula there was a small whitish patch with a cherry-red centre. This case gave the clinical picture of the disease noted especially among Jews as "Tay-Sachs" or "family paralytic amaurotic idiocy," to be accredited to either observer with equal honor, and to be differentiated from other forms which arise with a definite etiology, as lues, trauma, difficult labor, acute infection.

Inasmuch as the different family types of hereditary disease may be shown in almost endless variety of symptoms, Higier prefers to classify them upon an anatomical basis, as spinal, cerebral (or cerebellar) and cerebrospinal, or, in clinical terms, as spastic, ataxic and amyotrophic. It is not necessary that the specific cause of the disease should attack the same structures in different members of the same family, but in some individuals for example, when the motor tract is most susceptible, any part of it may be diseased, as in cerebral diplegia, spastic spinal paralysis, progressive spinal or neural amyotrophy, or muscular dystrophy. Thus it may come about in a group of cases in the same family, that one may suffer from genuine congenital optic atrophy, preëminently cerebral, another with a spinal or cerebellar disease.

Apraxy in Progressive Paralysis. (Apraxie bei Progressiver Paralyse).

M. LEWANDOWSKY. *Centralblatt für Nervenheilkunde und Psychiatrie*, 15 September, 1905.

The writer describes a patient who sat in a peculiar attitude and displayed an unusual limitation of the motion of the limbs. The right upper extremity remained persistently in a contracture-like position, the arm in adduction, the forearm flexed at a right angle, with the hand lying upon the chest, but, contrary to the conditions of hemiplegia, with the fingers open, and in shape for holding a pen. The limb resisted strongly all attempts to release it from this forced position, and continued in its state of contracture during sleep. The right lower extremity showed only slight spasm, and the tendon reflexes, particularly of the upper limb, were stronger on the right than on the left. The left hand was held firmly against the back of the left ear, as if the patient were deaf, and if it slid forward was immediately withdrawn to its former place by the patient. Occasionally the hand lay quietly at the side of the trunk: if the patient were standing, he moved the hand to and fro on the back; if he became irritable, he made rubbing movements with the left hand upon the head, in a circular movement always from left to right. All objects placed in the left hand were held tightly; after a time, many, as a percussion hammer or pencil, were permitted to drop to the floor; infrequently an object was tossed away, but eatables were never thus disposed of. With these exceptions objects placed in the hand were generally carried behind the ear or to the mouth: eatables much more frequently to the mouth; and other objects much

more generally behind the ear. The hand was never seen to be moved from the ear to the mouth, though the contrary motion was quite frequent. Flat objects, as paper and a key, were rubbed by the flat of the hand, but the patient at no time was seen to pick up any object spontaneously, nor did he remove any eatable substance from the mouth when it was placed there. He was aphasic.

The condition of the left upper extremity was thus not one of hemiplegia, but a limitation to three movements only; that is, a movement behind the ear, one to the mouth, and rubbing of the head. The author believes that such a peculiar and persistent condition is not to be attributed solely to dementia, although the patient was extremely demented. It might rather be due to limitation of his power of perception, as the special senses were involved, but this was not complete. But neither of these explanations is sufficient, and the symptoms are more characteristic of motor apraxy as defined by Leipmann. Motor apraxy shows itself by inability of the patient to accomplish certain voluntary movements, just as in aphasia words cannot be spoken. Nothnagel used the term "mind palsy." In pure mind palsy the patient has lost the power of voluntary exercise of the extremities, though otherwise there is no disability of motion.

The Mental Symptoms of Syphilis. (Die psychischen Symptome bei Lues.)

J. FINCKH. *Centralblatt für Nervenheilkunde und Psychiatrie*, 15 November, 1906.

The writer summarizes the mental symptoms of syphilis in so far as they are characteristic, excluding post-syphilitic psychoses, especially general paresis. Among functional disturbances the neurasthenic are the most prominent class. Next to irritability, uncertainty and fatigue, a whining and mawkish tone is prominent, which develops early into a condition of caprice, surliness and wrathfulness. From this a hypochondriacal state is evolved which bears definitely upon the dread of the infection. The symptoms appear gradually and are only to be differentiated from those of paresis by the results of treatment. They are the forerunners of states of depression, which may be tinged with hypochondria or reach a degree of severe melancholia with incidental paranoiac ideas. Maniacal attacks, epileptiform seizures and circular states are also observed, which tend to dementia.

This dementia is the most frequent and important condition. It may be associated with dulness and incoherence, from which arise all grades of intellectual disorder to extreme stupidity. This may appear quickly or may remain stationary for years. Just as the other nervous symptoms may be circumscribed this state may be partial and the patient remain capable of considerable mental activity. Thought, power of attention and alertness may be retained. Orientation as to time, place and surroundings is not necessarily lost, and automatic or merely mechanical

capacity is retained. In other cases the faculty of attention is seriously involved, as in the amnesic psychosis. This is apt to follow a spasmodic attack with disturbance of consciousness, and resembles Korsakoff's psychosis in the sense of well-being, forgetfulness and confabulation.

Episodic states constitute another group in which the incidents depend upon a clouding of consciousness, varying in degree from slight dulness to coma or active delirium. Toxic stupor is an especially noticeable form represented by a half-asleep, half-awake and dreamy state, with unappreciated, practically automatic acts. This may appear as lethargy or dreamy delirium with hallucinations, pronounced motor unrest, disorientation and defect of recognition.

The anatomical basis is first of all vascular disease with wide-spread changes in the cortex. On account of the varied distribution of the lesions, different manifestations may result. When the whole process is renewed from beginning to end, the symptoms are seen to follow in course, arranging themselves in different parts of a general clinical picture, fragments of which dominate the scene at different times and for varying periods. In a large number of cases syphilitic silliness appears, just as in organic cerebral lues, which destroys so definitely the cortex. This silliness or imbecility is the typical mental state of hereditary lues, and causes the stunting of cerebral development. Not infrequently it is associated with epilepsy and hydrocephalus with blindness as a result of complicating hemiplegia.

Certain complicated cases are characterized by clouding of consciousness with loss of energy, hallucinatory delirium with excitability, or a state of exaltation with transitory ideas, senseless expressions of grandeur and active motor impulses upon which may be grafted a taint of depression, with paranoia. Hallucinations of hearing are rarely absent from these cases. The disease may last twenty years or more.

One group of cases is described as syphilitic pseudo-paresis. This is recognized by its long duration, the absence of semi-paralytic states and its stationary periods. The differentiation may be assisted by the presence of cranial nerve lesions and the absence of disturbances of speech and writing. From this it appears that the chief differential point lies not in the number and value of the mental manifestations, but rather in the neurological findings. But the nervous as well as the mental symptoms may be indefinite. No single mental manifestation is pathognomonic of syphilis, and the diagnosis depends upon the general mental weakness revealed in the symptom grouping, the course of the disease, the character of the dementia, the evidence of focal lesions, and finally the history and the results of treatment. There are undoubtedly cases in which the distinction cannot be made during life.

The Clinical Significance of Indoxyl in the Urine.

LEWIS C. BRUCE. *Journal of Mental Science*, July, 1906.

Dr. Bruce has investigated the course of indoxyl in twenty-seven patients, thirteen of whom were mentally depressed and fourteen repre-

sented other forms of insanity. As the result of his observations he makes the following conclusions:

(1.) That there is some connection between this symptom of the presence of excess of indoxyl in the urine and the mental symptom of depression.

(2.) That, to judge by the result of treatment in one of the cases, the indoxyl may have been the causative factor in the mental disease.

(3.) The evidence is in favor of the indoxyl being the cause of the depression rather than the depression being the cause of the presence of the indoxyl.

(4.) The fact that four typical cases of melancholia had no indoxyl in the urine appears to be evidence that we cannot regard all cases of melancholia as suffering from indoxyl poisoning. We must remember, however, that many toxins may, by linking themselves chemically to the nerve-cells or otherwise altering their functional activity, produce long-continued mental effect after the presence of the toxin can no longer be demonstrated in the excretions of the body. He believes that this is the explanation of failure to improve the condition of patients who are not placed under treatment sufficiently early.

(5.) The presence of an excess of indoxyl in the urine means a loaded alimentary tract, which should at once be treated by the use of large enemata—two to three pints of normal saline solution by preference—and the placing of the patient on a purely milk dietary or a milk and farinaceous dietary.

The whole alimentary tract can be rendered free from putrefactive processes by seeing that the mouth is kept clean—by the removal of carious teeth and by the use of antiseptic mouth-washes; by placing the patient on small but frequent quantities of milk diluted with aerated water and washing out the large intestine with enemata. The benefit of this treatment is not obvious, especially in patients who show symptoms of alimentary disturbance and toxemia, and under such treatment indoxyl practically disappears from the urine.

Progressive Spasm—Mental Torticollis. (Spasmus progrediens—Torticollis mentalis).

HUGO LUKACS. *Centralblatt für Nervenheilkunde und Psychiatrie*, No. 224, 1 November, 1906.

Under the title of Mental Torticollis French writers have described a spasm of the musculature of the neck of mental origin, due to either an involuntary forced attitude or a delusion. The patients they described are afflicted with clonic spasm of the neck and throat. Lukacs describes an analogous case in which the spasm was tonic, and spread out to involve the muscles of the trunk. The patient was a man of forty-six years who had had syphilis, drank heavily and lived a fast and extravagant life. He was admitted to a hospital in a state of active insanity with restlessness, irritability, agitation and hallucinations and delusions.

The active mental symptoms gradually subsided and the delusional state became more prominent and more fixed, inducing a feeling of anxiety. His chin was drawn down on the chest, and remained in this position. He explained this by saying that it was desired that he be strangled. During the following month the rigidity of the throat and neck muscles extended gradually so that the face was directed toward the left, the ear approached the clavicle and the chin turned upward. An attempt was made to counteract the spasm by the use of plaster of Paris, but after six weeks, on removal of bandage, the original attitude was resumed. A segment of the right sternomastoid muscle was removed with temporary relief, and then the face turned more to the left than before. The tonic contraction of the intercostal muscles resulted in retraction of the spaces and prominence of the ribs; the lower end of the sternum pointed upward so as to bring the false ribs into view, the abdomen was shaped like a trough and the back was strongly arched. The spasm continued during sleep but disappeared during anaesthesia.

The difference between this case and ordinary torticollis lies in the wide extent and tonic character of the spasm. The condition in one form or another is not rare among mental cases; the lesion is cerebral and the prognosis is unfavorable.

MEDICINE

Edited by Samuel B. Ward, M. D., and Hermon C. Gordinier, M. D.

The Dietetic Treatment of Gastric Ulcer. (Bemerkungen ueber die diatetische Behandlung des Magengeschwürs.)

SENATOR. *Zentralblatt für innere Medizin*, 1906, No. 4.

While the treatment of gastric ulcer recommended by von Leube and Ziemssen consisted in the sparing and relief from activity on the part of the stomach, Lenhartz for some time has recommended the administration from the outset of more nutritious food in order to prevent the weakening effect of the older therapy and the prolongation of the treatment. This diet however is concentrated milk, eggs, chopped beef. Other writers have confirmed his good results. The author seeks to combine the advantages of both methods of treatment in that he allows in addition to small quantities of albumen, gelatine, fats and sugar. The gelatines have the advantage of great nutritive value, easy digestibility and the possibility of being local haemostatics. The fat tends to diminish irritability, is therefore sedative and also like the sugar combines with much acid. He gives daily fifteen to twenty grams of gelatine, half a pint of cream and thirty grams of butter which is easily taken in frozen balls. In this manner abundant nourishment can be given with careful protection of the stomach.

Later milk and eggs are allowed, and about one week after a hemorrhage chopped beef is added.

ALBANY MEDICAL ANNALS

Original Communications

TYPHOID FEVER IN THE HUDSON RIVER VALLEY.

*Rewritten from an article read before the Dutchess Medical Club,
Poughkeepsie, N. Y., June 25, 1906.*

By FREDERICK J. MANN, PH.B., M. D.,
Poughkeepsie, N. Y.

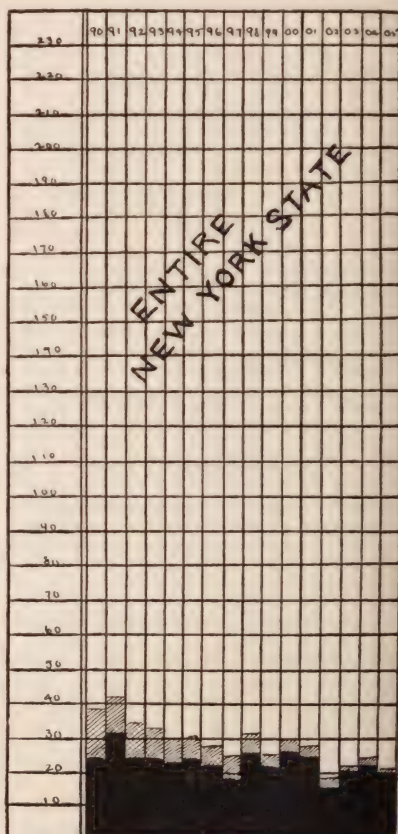
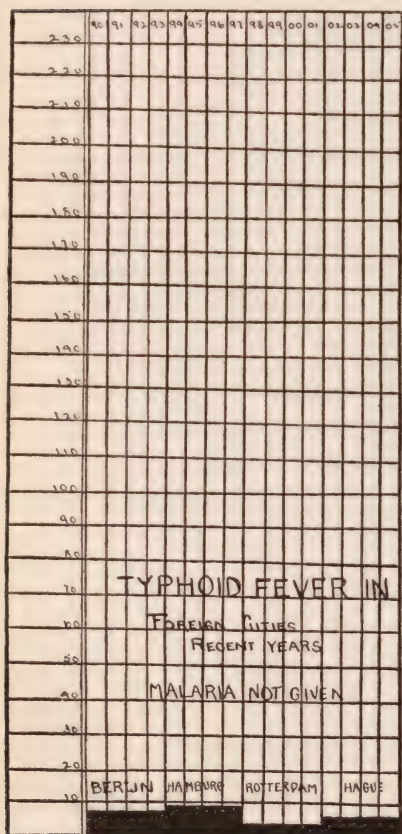
These charts show the deaths from typhoid and malarial diseases per 100,000 of population. The typhoid mortality is shown by the solid black, and the malarial by the shaded lines added to and placed above the typhoid. In thus placing the typhoid and malarial deaths together, I believe that deaths from malaria in this climate are rare and that those given are really due to typhoid. Drs. Reed, Vaughn and Shakespeare, in their report on the origin and spread of typhoid in the Spanish war, proved that the cases reported as typho-malarial and malarial fevers were simply typhoid. In fact they find that many cases of simple diarrhea really should be classed as typhoid.

Comparison of these charts show that each year a smaller percentage of cases are being reported as malaria, so that it seems fair to assume that practically all deaths reported in New York State for some years as malarial are in fact typhoid. When Albany and Schenectady, as their charts show, largely cut out their typhoid by introducing pure water, the so-called malarial deaths also disappeared.

Newburgh and Kingston do not get their water supply from the Hudson river—Newburgh's comes from Orange lake and is probably somewhat liable to contamination. Kingston's is from mountain springs and streams and is supposed to be of good quality. These two cities have almost the same population and seem to be so situated as to make comparison between them fair; but in the past fifteen years Newburgh has reported seven typhoid deaths to each one of malaria, while Kingston has reported three

from typhoid to each five from malaria. In other words, Kingston's malarial typhoid death rate shows a malarial excess about ten times that of Newburgh. Does not this show it to be simply a question of diagnosis?

Dr. Osler has called attention to the frequency with which malaria has been given as a cause of death in New York State,

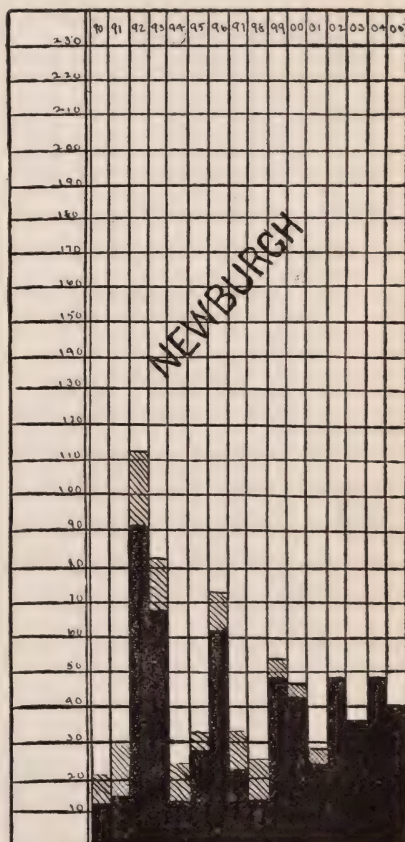
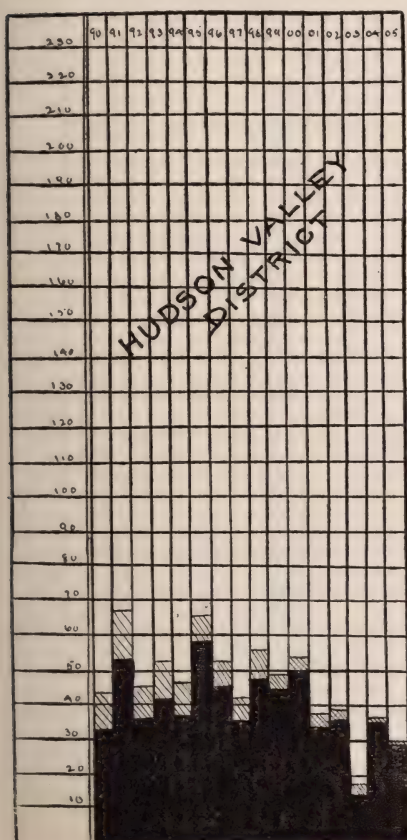


and with gentle and good-natured sarcasm has referred to typhoid fever as "New York Malaria."

Editorially the *Journal of the American Medical Association* says that too many practitioners still fail to realize that a fever that does not yield with reasonable promptness to quinine is not malaria and that in many districts the only continued fever is typhoid.

This elaboration is because I consider that practically all the malarial deaths shown on the charts of this paper are in fact typhoid. As Poughkeepsie's chart shows, the enlargement of its filtration plant in 1897 reduced both the malarial and the typhoid deaths.

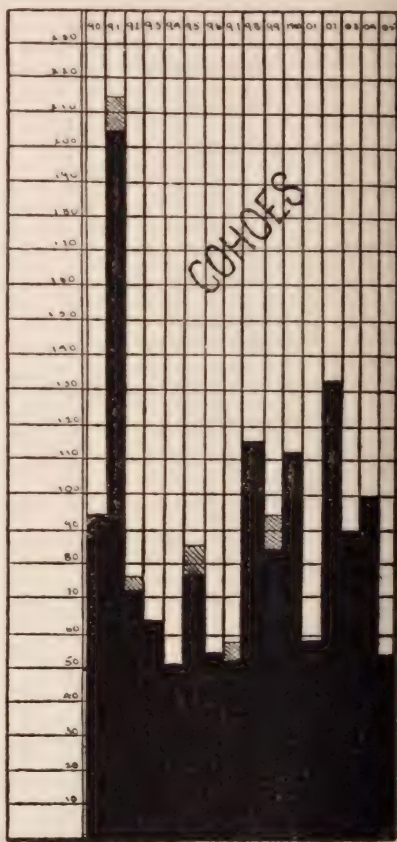
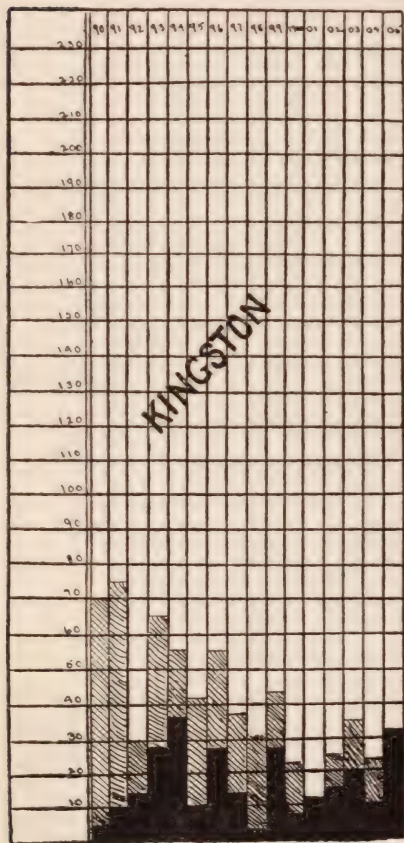
Of the eight sanitary districts in New York State, the Hud-



son Valley district includes those counties north of Westchester county which border on the Hudson river. These charts show that New York State has a higher typhoid death rate than the foreign cities given, but that the rate of the Hudson Valley district is more than twice that of the entire State.

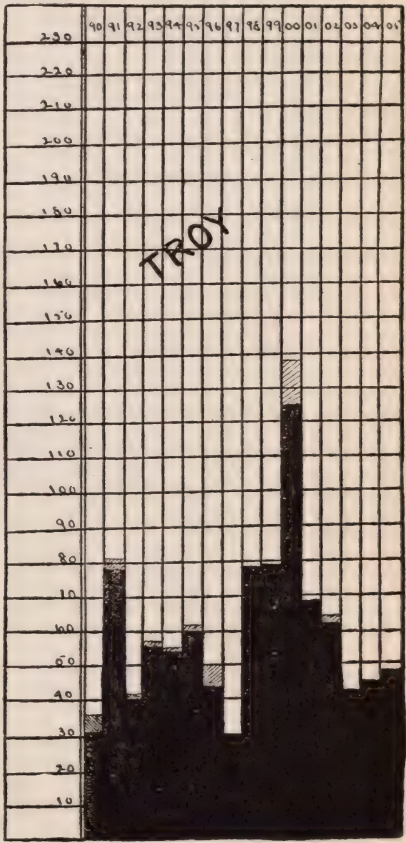
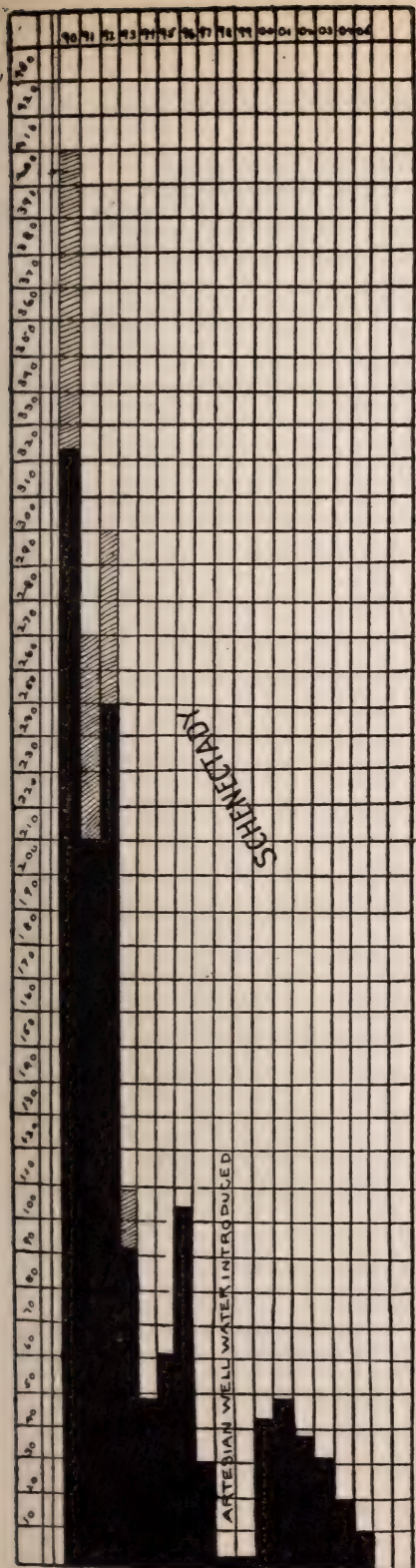
Usually typhoid is most prevalent in September and October, as is shown on the last chart, on which the New York City line

is a fair sample of the high summer-autumn curve and the Poughkeepsie line corresponds closely to that of the Hudson Valley district, where typhoid is most common in January to April. The reason is that in this district it is a disease of the cities and not of the rural population, and of winter, not of summer. The excessive typhoid of this valley is manifested in



those cities which have been drinking their own and other cities' sewage from the Mohawk and Hudson rivers.

Schenectady, while not in this district, I wish to consider. It had most excessive typhoid and malaria until 1898. Before this it had been drinking the Mohawk river water, well polluted by sewage from cities and towns above. In 1898 it introduced a pure water supply from artesian wells, and the report of the State Department of Health of 1900 says, "that from having the



highest typhoid mortality in the State, the disease has now almost disappeared there." Their increase in the year 1900 is thus explained in the annual report of their health officer of the date of May 31, 1900: "Fifty-three cases were reported since January 1, 1900. The physicians of this city attribute the cause of this sudden outbreak to the fact that on January 6, 1900, a break occurred in the supply pipes from the waterworks to the city, and that Mohawk river water was pumped into the city supply pipes for two days. Some of this contaminated water was not flushed out and must have remained in the supply pipes for a long time. The first cases reported after the break were on January 23d. From this date to February 13th the majority of the cases were reported." This resulted in the adoption of signals to be given by the fire alarm whistle whenever anything happens to compel the pumping of river water into the supply pipes. Their typhoid since then is explained, partly because they have used river water once or twice on account of fire or emergency causes, and partly by the use of wells in outlying parts of Schenectady.

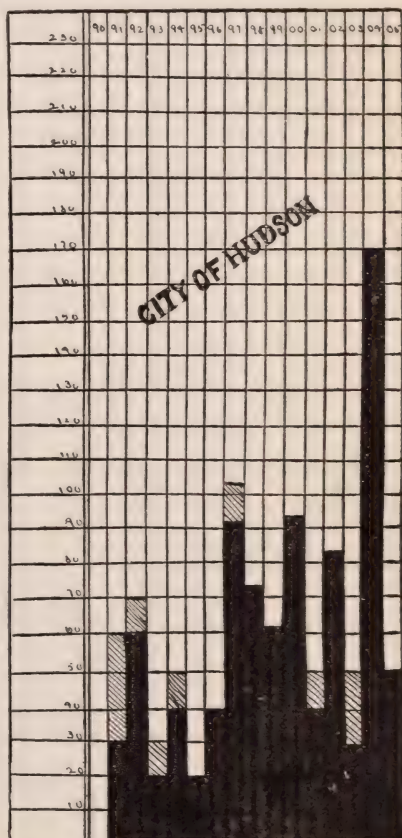
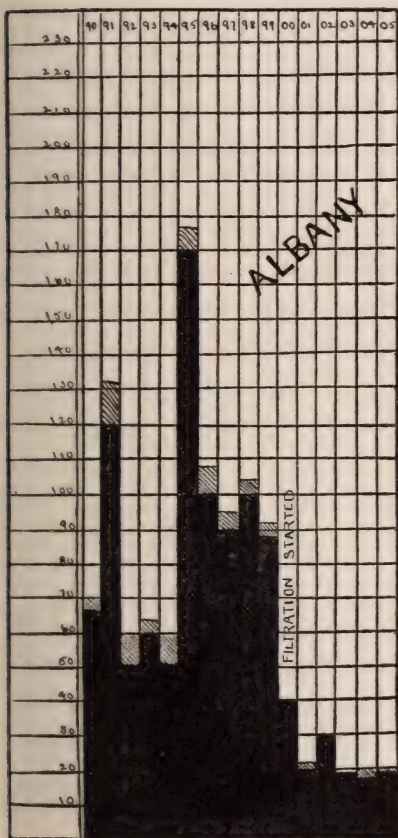
Cohoes. Its chart speaks for itself—the murderous effects of drinking sewage, for Cohoes drinks the Mohawk river water plain; the same as Schenectady used to drink, plus the sewage of Schenectady.

Troy uses practically the same polluted river water and has excessive typhoid.

Albany. Here we see the influence of the river water before and after *efficient* sand filtration introduced in November, 1899, and the chart of the Hudson Valley district shows a decrease since to correspond. Albany's population of 100,000 is very close to one-seventh of that of the entire district. Dr. Craig, the Health Officer of Albany, states that it seems certain that the large number of cases of typhoid fever and the consequent large death rate in that city was due to the use of polluted Hudson river water below the outlet of the Mohawk river. The Albany filters are removing over ninety-nine per cent. of the germs from the water and, as Dr. Craig shows, protect the people of that city from the ravages of typhoid fever.

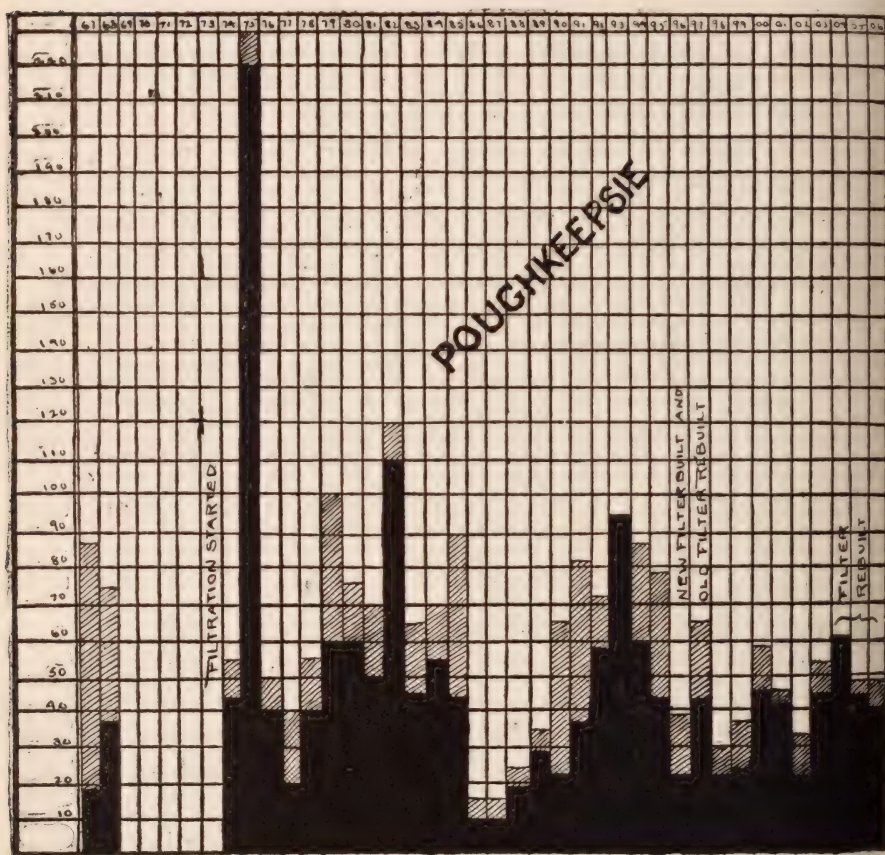
The *City of Hudson* has used the river water with a slow sand filter installed about 1872, but which has become so out of repair as to be little better than nothing, with the same result as that of the other cities using the river water, a continued large excess

of typhoid and allied conditions. They have or are about to introduce another system of water supply. Dr. Rossman of that city in a recent article says that besides the cases reported as typhoid, that many other cases of said disease have probably been called "colds, grippe, influenza, winter cholera, colitis, dysentery, tuberculosis or malaria."



Cohoes, Troy, Albany, Hudson and Poughkeepsie, all using river water, have more typhoid in winter than in summer. The State Health Report of 1893 says that nearly one-half the deaths for the entire Hudson Valley district occurred in Albany, Troy and Poughkeepsie, although their combined population is less than one-fourth that of the district. This is largely the case each year.

Poughkeepsie's chart is of special interest from the fact that this city was the first in the United States to use sand filters, which were erected in 1872. Before that local wells and cisterns were the only supply. The great excess of typhoid in the year



1875 is best explained by these quotations: First, from the Sixth Report of the Poughkeepsie Water Commissioners, dated January 1, 1875. "The use of these filter beds has been abandoned, except as may be occasionally required when the water may be unusually turbid, to save \$2,237 per year, subsidence in the reservoir being substituted." The next report of the same board, of the date of January 1, 1876, says the filter beds were filled

February 26, 1875, and used till July 4, and again August 21 to December 26, 1875.

Dr. Hasbrook, the Health Officer of the city, says in his report of 1875, that there were forty-four deaths from typhoid fever, which he says, "for a preventable disease is not a creditable showing." Certainly this huge experiment, when, during the two winter months of January and February, 1875, as well as other times later in the year, practically unpurified river water was used, with its resulting forty-four deaths from typhoid, is proof positive that the Hudson river water must be considered as one, if not the most important cause of typhoid in Poughkeepsie.

An additional filter bed was built and first used December 28, 1896, and the next summer the original filter was rebuilt and put into use again September 30, 1897. This enlarging and rebuilding of the plant, as the chart shows, was followed by a marked decrease in the combined typhoid and malarial deaths.

Incidentally the general death rate of Poughkeepsie for the six years before this (1891 to 1896) was 21.9 per 1,000 of population, as against 18.2 per 1,000 of population for the six years following (1897 to 1902). This means a reduction of about eighty-eight deaths per year, a large part of which is without doubt due to the rebuilding of the filtration plant.

The chart shows that typhoid has again increased in Poughkeepsie for the past four years (1903 to 1906). This is partially due to the fact that the plant had gotten out of repair and was leaking, also in part to its lack of cover which made it more difficult to keep up the efficiency of the plant in cold weather. The last chart of the series shows that the average germ count of the effluent of the Poughkeepsie plant, as given by months for the years 1898 to 1903, corresponds closely to the amount of typhoid by months. This is certainly a clear proof that Poughkeepsie's typhoid is largely due to the use of river water which has not been sufficiently purified.

In the spring of 1904 it was decided to rebuild the entire filtration area, which, after delays, was entirely completed in August, 1906. This consisted in rebuilding the beds on the most modern methods and the adding of a concrete cover. The pumping arrangements were also so changed that by working the filters more hours per week a slower rate of filtration could be used.

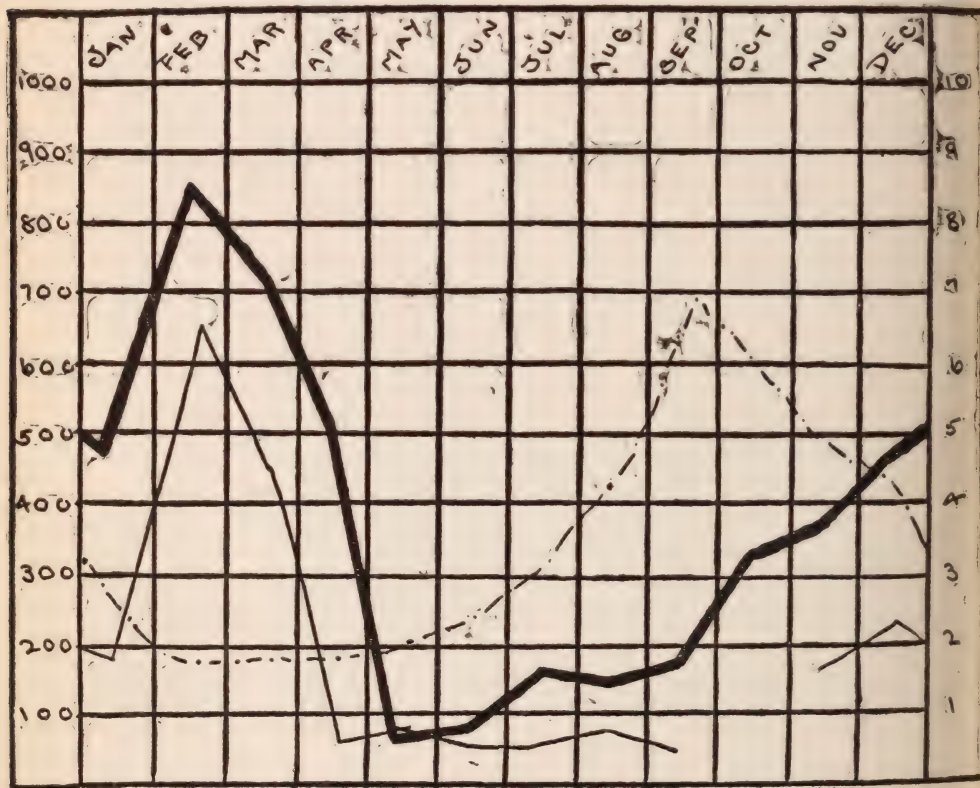
That the typhoid in this city has not been more reduced since

the rebuilding of the plant in 1896 is due to the fact that a false civic pride has prevented honest criticism, for the plant has not been conducted on the most modern scientific basis as compared with the workings of other plants both at home and abroad.

The charts of Newburgh and Kingston are added to complete the group of the Hudson Valley cities, although neither derive their supply from said river. Newburgh is easily seen to have more typhoid than the average of the entire State. Certainly it is not right to ignore Kingston's malaria in considering her typhoid.

Deaths from typhoid,
New York City and
average germ count
Poughkeepsie filter-
ed water.

Average typhoid mor-
tality, Poughkeepsie,
1898-1903.



- Heavy black line shows average number of cases of typhoid in Poughkeepsie, 1898-1903.
- Broken line shows typhoid mortality, New York City, 1891-1900.
- Light black line shows average germ count of Poughkeepsie filtered water, 1898-1903.

IS WELL WATER A CAUSE OF TYPHOID FEVER?

*Read before the Dutchess Medical Club, Poughkeepsie, N. Y.,
January 21, 1907.*

By D. J. HOYT, A. B., M. D.,
Poughkeepsie, N. Y.

In a brief paper I will give a few facts which I have observed in some of my typhoid cases, and these facts as set forth in the history of five of my cases point strongly to a positive answer to this question.

While it is nearly, if not entirely, impossible to find, and thus prove scientifically, the bacillus of typhoid in well water, yet having given a well in a bad location, especially within city limits, with surrounding conditions favorable for its contamination and a family drinking this water and one or more of that family developing typhoid fever, it is fair to conclude that the water in this given well is the source of the infection.

Case No. I. Patient, W. W. H., male, age 22, student, residence, Indiana. About five weeks after his arrival in our city he developed typhoid fever and ran a typical course, recovering in due time. He was in the habit of drinking freely of the well water at his boarding place, drinking none other unless city water, which is filtered by our new filter beds and which are in good condition according to the bacteriological count at this time. Three other cases of typhoid fever have been recorded against this well. This well is not a driven-well but is thirty-five feet deep situated near the back door of the residence, top covered with rotten boards and situated about fifty feet from an out-house which has not been cleaned for some time. If you can imagine with me a triangle upside down, its base fifty feet, which is the distance between the well and out-house, the perpendicular thirty-five feet, which is the depth of the well, and the hypothenuse not given, but easily found, I think the incline of that unknown line would have sufficient grade to allow drainage to settle through the ground to the bottom of this perpendicular, which is the bottom of this well.

Case No. II. Patient, E. R., female, age 9. Two other children in family, one older and one younger. Family moved into city about two months before, when E. R. came down with typhoid fever. This case was removed to Vassar Brothers Hospital and in due time recovered. But about two weeks later her sister, L. R., a child of eleven years, developed fever and had the usual run of typhoid, recovering in due time. This well is near the back door in a bad location, as three sources of contamination are possible, two out-houses within fifty feet and a cesspool about thirty feet. The well is about thirty feet deep and poorly protected from all surface water. The fact that this family had no access to city

water and that they had lately moved into the city, makes it almost proof positive that this well water was the source of the infection of these two cases of typhoid fever.

Case No. III. Patient A. L., age thirty-eight, male, and patient W. R., male, age twenty-two. Both developed typhoid fever about four months ago. The first patient had a mild course, the second had a very violent course and terminated unpleasantly. These two cases are of interest for the reason that they both drank from a spring, which from the surroundings could be easily contaminated by a truck-garden area and an Italian settlement in the near vicinity.

Case No. IV. Patient G. J., male, age nine, developed typhoid fever in spring of 1906, and ran a moderate course with good speedy recovery. Never drank any other water but from this well in question. This well is of the "old oaken bucket" type with well house and bucket. It is situated near the house, about ten feet from side door. Forty feet away is a blind cesspool and an out-house. The depth of this well is between thirty and forty feet. Again calling to your mind the triangle formed by the depth of the well, the distance from the blind cesspool and out-house and the hypotenuse connecting these lines, I feel that drainage could easily settle toward the bottom of this well.

Case No. V. Patient J. S., female, age twelve. Two sisters and two brothers living and well. On November 14, 1906, patient developed typhoid fever and had a moderately severe course, convalescence being uneventful. This case is of special importance from a few carefully ascertained facts. City water in the house, but patient did not like this water, and all the fall had been in the habit of going across the street to a well. She also brought some of the water to her home for her own use, saying always that she did not like the river water as she had seen a dead dog in the river. No other member of the family drank this well water. This well is a cesspool in itself for a number of out-houses and back-door slops from five or six houses further up the hill. The surrounding conditions of this well are of such character that words can hardly express the facts, and one has only to see to be convinced of the easy way this well is contaminated.

All the above cases of typhoid fever gave a positive Widal reaction.

Specimens of the several waters above referred to were analyzed and all showed a high percentage of contaminated chemical evidence.

I thoroughly believe that when the old wells of all cities are closed it will be a long step in the progress of forensic medicine.

MILK AS A CAUSATIVE FACTOR IN TYPHOID.

*Read before the Dutchess Medical Club, Poughkeepsie, N. Y.,
January 21, 1907.*

By LEWIS HENRY MARKS, M. D.,
Poughkeepsie, N. Y.

Milk is undoubtedly one of the causes of typhoid fever epidemics. All of our standard text-books state that it is a carrier and excellent culture medium. The bacilli of the disease is transmitted to the milk in various ways: by cans washed in infected water, by attendants who are in attendance on typhoid patients, by milk exposed to flies and dust laden with typhoid germs.

Dr. Ernest J. Lederle, president of the New York Board of Health, in a notice to milk dealers, advised that the rooms in which milk is sold should not communicate with one which is used for living or sleeping purposes, because,—

1st. Milk readily absorbs odor from the surrounding atmosphere and is thus rendered more or less unsuitable for use.

2d. Milk furnishes an excellent medium for the growth of many kinds of disease producing germs and through it may be readily transmitted such diseases as tuberculosis, typhoid fever, scarlet fever, influenza, dysentery and probably some others.

If any person sick of any one of these diseases is present in a living or sleeping room, unless the greatest care is used, and even in spite of this, the germs producing these diseases may be conveyed through the atmosphere or by the hands or clothing of those in contact with the sick, and thus the milk becomes contaminated.

One of the characteristics of a typhoid epidemic caused by milk is the rapidity of its dissemination. Specific instances of epidemics traced to milk do not appear in our text-books, but rather are to be found in the reports of wide-awake health officers. Dr. Lederle reports a series of eighty-six cases occurring in one of the New York boroughs which were traced to one case of typhoid in the family of a milkman who had supplied all the families of those taken sick. The well was found contaminated and ordinary sanitary precautions had been neglected.

Dr. Ernest Wende, of Buffalo, in a paper on "City Milk Routes and Their Relation to Infectious Diseases," which was presented to the Section on State Medicine at the twentieth

meeting of the American Medical Association, held at Columbus, Ohio, 1899, reports three epidemics. They are interesting and instructive, hence are reported:

"On September 4, 1894, we were assured by the records of the register that nineteen cases of typhoid fever had developed with wonderful rapidity in families served by a milkman living in a sparsely settled section of the northern part of the city. The Health Department forthwith instituted an investigation which showed the startling result that the wife of the milkman, surrounded by unfavorable conditions, was ill with the fever, however, on the borderland of recovery. She was still being nursed and cared for by the husband, who likewise was handling the milk and washing the cans in a most objectionable manner, with water procured from an old cistern that had, during the preceding year, been the subject of several sanitary complaints. Another powerful factor that made the transmission of the disease, through the medium of the milk, eminently capable, was the fact that the patient was not isolated, but cooped up in a small stuffy chamber joining the kitchen, in direct communication with the milkroom. It is hardly necessary to state that the sale of milk was interdicted, the cistern ordered abandoned, disinfected and filled, and everything pertaining to the dairy and the premises in general placed in a sanitary condition. By this and other procedures the spread of the disease was checked, no further case occurring on the route.

"On August 21, 1895, the Department again, through the intervention of the register, discovered eighteen cases of typhoid fever intimately associated with the milk route of a dairyman located on the outskirts of the city. An inquiry into the causes and circumstances of the outbreak revealed that his premises were not what they should be by reason of defective drainage and a badly constructed, ill-ventilated and unclean milkhouse, conditions, as might be expected, most favorable for the reception and multiplication of the typhoid bacillus. The peculiar interest connected with these cases was that the wife of an employee had propagated the infection that had contaminated the milk through the agency of her husband, who, at night, not only acted as nurse but fulfilled all the other necessary household duties, and who, during the day, handled and delivered the needed product to the confiding consumers, without changing his clothing for days, or taking any precaution whatever. The sick wife

was immediately removed to the hospital and the unsanitary conditions so promptly changed that, by August 30, just nine days after the discovery of the first, no further cases were reported.

"Again on March 9, 1896, the register indicated the existence of fourteen patients affected with typhoid, on the route of a milkman residing in the western portion of the city. Here we acquired the information that the milkroom was in the rear of the first floor of the building which he occupied. Several months previous, a case of typhoid developed on the floor above, in a separate family, and ran its full course. These cases undoubtedly arose in consequence of the unsanitary conditions prevalent in and about the building, and for like reason the contagion remained active until finding expression in the dairyman's route. A quick subsidence of the epidemic followed the suppression of the milk, thorough cleansing and disinfection."

The epidemic which occurred at Williamstown, Mass., was found by its investigation to have been caused by infected cream eaten with breakfast food.

Some of the typhoid which we have had in Poughkeepsie may have been caused by infected milk, for our system of inspection is not yet perfected nor are our dealers pointed out as models of cleanliness, therefore our milk should be taken into consideration when many cases develop. We face the possibility of an epidemic from infected milk here as do all places where the supply comes from so many sources.

Another reason is because some of our fever cases are not traced, because they do not have the official stamp—that is, do not respond to the Widal test or the diazo reaction during the first week. It seems to me that cases which do not respond to the Widal test or the diazo reaction, yet present the clinical signs, should be reported and investigated for safety's sake at least.

While the majority of the cases of typhoid respond during the first week to the Widal test, there are cases in which the reaction is delayed or occasionally absent, therefore a negative result of the test does not exclude the diagnose of typhoid. (Dr. Welch, *Journal of the American Medical Association*, August 14, 1897.)

The diazo reaction is also open to criticism. Some cases are not subjected to tests, hence are not accepted.

Where two or three cases of typhoid are found along the route of a certain dealer, his place should be inspected as should the homes of all those who deliver milk to him for distribution.

All physicians should cooperate with the Health Officer and report promptly all cases of typhoid. In this way the disease is not likely to obtain a very great foothold or make much progress.

The milk committee of this society by its inspections of the city supply and by its demonstrations and instructions to dealers, are doing a good work for the city, by lessening the chances for infection by the milk route and consequently should receive our hearty support and endorsement.

THE LABORATORY DIAGNOSIS IN TYPHOID FEVER.

*Read before the Dutchess Medical Club, Poughkeepsie, N. Y.,
January 21, 1907.*

By ELTON G. LITTELL, M. D.,

Physician, Vassar Brothers' Hospital, Poughkeepsie, N. Y.

The laboratory is of value in the study of typhoid fever, for the earliest possible determination of the nature of the disease, not only in atypical cases where the diagnosis is obscure, but even in those cases which later prove to be typical.

Various methods are employed: the most important being the diazo reaction, the Widal and the blood culture. In addition to these, typhoid bacilli have been isolated from rose spots, from the urine and from the stools. From the urine¹ they are obtained in about twenty-five per cent. of cases, varying in different epidemics. As a rule, they are present only when a large amount of albumin is passing through the kidneys and from the second to the fourth week. They may persist a long time during convalescence—thus becoming a possible source of further infection. The bacilli are obtained from the stools usually about the middle of the second week, in one series of fifty cases, in twenty-five of them before the appearance of the rash or the Widal. However, these methods of diagnosis are not valuable for their general usefulness.

Leucocyte Count. As in a few other febrile diseases, the total number of leucocytes in typhoid is low. A relatively high lymphocytosis exists, appearing during the second week and gradually diminishing during convalescence. The eosinophiles²

disappear entirely during the first week, and so constantly that, even when some disease accompanied by an eosinophilia has existed before, the presence of even a few of these cells is a valuable aid in excluding typhoid. During convalescence they reappear in greatly increased numbers.

Blood Smears. If the observations of Poeppelman prove to be true, further aid in diagnosis can be given by ordinary blood smears. He claims that if the smear be stained by the May-Gruenwald or the Giesma method, the bacilli can be found in large numbers. It is difficult, however, to distinguish between sediments and bacilli, and even if rod-shaped structures are present, we have no further means for identifying them as typhoid bacilli.

The Diazo Reaction. The diazo reaction is frequently used. Its value is diminished by its presence in miliary tuberculosis, with which typhoid may be confused. It is present toward the end of the first week; and in the first two weeks in from seventy to eighty per cent. of cases. It disappears at the end of the third week. It usually reappears in a relapse, and the intensity of the reaction is usually in proportion to the severity of the disease.

Blood Cultures. The most marked advance in laboratory methods is seen in blood cultures. The typhoid bacilli are present in a large per cent. of cases in the first week or even during the first few days while the objective symptoms are still absent. In 1904 Coleman and Buxton³ published the results of their observations in 604 cases, in seventy-five per cent. of which the blood cultures were positive. Next month they will publish the result of their studies in 1,500 cases.

Dr. Coleman says:⁴ "Dr. Buxton and I shall take the ground that the bacillus typhosis is present in the blood in every case of typhoid, except perhaps some of the short duration cases. We base this conclusion upon the results which have been obtained by several investigators—one hundred per cent. of their cases positive—and our own results last summer—also one hundred per cent. Failure to find the bacillus typhosis in the blood at any time prior to the last two or three days of the febrile period is probably due to error of technique."

The bacilli disappear usually about the end of the third week and during the relapse reappear in eighty-six per cent. of cases. The technique is not very difficult, but the many culture media

necessary and the process of identifying the typhoid bacillus is so long that the method is impracticable to the average physician.

The Widal. More general is the use of the agglutination or Widal test. The exact cause of the clumping and loss of motility of the bacilli in such a test is still unknown.⁵ It is assumed to be due to the reaction between the bacteria and some immune body or bodies (called agglutinins) circulating in the blood and formed by either the typhoid bacillus or its products on the somatic cells during the course of the disease. The time of the first appearance of the reaction depends on the dilution used. A dilution of one to sixty for one hour gives a positive result in ten per cent. of the cases during the first week; in about eighty per cent. during the second week, and in the other eight or nine per cent. during the fourth week. It is absent in only two or three per cent. during the course of the disease if frequent tests are made.⁵ If only one or two examinations are made the number of positive reactions obtained falls much lower owing to the fact that the agglutination appears to this degree in some cases only for a few days and then becomes much weaker. It may be present on alternating days; negative on the intervening days, for a few examinations. Gwyn's⁶ results show the average of 99.6 per cent. of positive reactions during the fever. Libman says that using dried blood and diluting one to twenty he has never seen a typhoid case which did not give the reaction at some time during the course of the disease. The reaction (with dilution one to forty for one hour) is present in some cases of jaundice from various causes. This gives rise to the theory⁷ that the patient has had typhoid at some previous time and that the gall bladder has been infected by the typhoid bacilli, with the production of a chronic cholecystitis, with or without the formation of gall stones; or that the infection may cause the jaundice by exciting chronic inflammatory changes in the common duct with subsequent stenosis. Agglutination with one to forty dilution simulating the Widal—a "pseudo-Widal"—may also occur in some cases of pneumonia, miliary tuberculosis and sepsis. The late appearance of the Widal in dilutions which can be considered as absolutely diagnostic, makes it of comparatively little value in the diagnosis of an active and well marked case. It is of great value, however, in obscure cases in which the characteristic symptoms have not been present at any time during the course. It is also of value in infants and, with proper care, in

the differential diagnosis between typhoid, miliary tuberculosis and some of those obscure intestinal infections which last only a few days and are most frequently seen in summer.

Macroscopical Widal. During the past few years the Widal has been modified so as to become of more general assistance. The modification makes the test more simple and free from danger and renders the microscope unnecessary. In addition the reading of it is absolute, either positive or negative. Ficker of Darmstadt devised a culture, a "typhus diagnosticum," he called it, in which the bacilli were killed by a one per cent. formalin solution. This culture is on the market, but it is too expensive for general use.

A satisfactory substitute can be made by many bacteriologists. Some⁷ prefer an emulsion of

Sterile water.....	450. parts
Glycerine.....	50. parts
Ninety-five per cent. carbolic acid.....	2.5 parts

With the formalin culture a large series of cases were tested with marked success, all of the typhoids causing agglutination and only two of over one hundred different control sera causing apparent clumping within the time limit. Of these cases, one certainly had typhoid and the other possibly had it. The dilution was one to one hundred in each case and if there was no clumping visible to the naked eye at the end of three hours the result was considered negative.

With the carbolic solution, thirty cases were tested with twenty-seven controls. The reaction, if positive, occurred within twenty hours. Of the thirty cases twenty-nine agglutinated in a solution of one to one hundred. The one case which failed to clump died in the second week of his disease. None of the controls reacted in a dilution of one to forty. Two of them were from cases with jaundice.

In conclusion:

1. The blood culture is of the greatest value for its frequency and early appearance, but it is impracticable for general use.
2. The Widal is next in value, being second in frequency but appearing later in the disease. Of the technique, the macroscopical has the advantage of simplicity, freedom from danger and a reading which is absolute.

3. The low leucocyte and high lymphocyte counts rule out obscure surgical conditions.

4. The presence of eosinophiles points against typhoid.

5. The staining of blood smears is of no value at the present time.

6. The diazo is of assistance only in conjunction with other tests.

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FIGHT AGAINST TYPHOID.

Read before the Dutchess Medical Club, January 21, 1907.

BY J. H. M. A. VON TILING, M. D.,

Poughkeepsie, N. Y.

I have not had time to write as fully as I wish I could, but I would like to make a few remarks on the burning question of how to exterminate typhoid fever.

Though I am not a bacteriologist and have not had much experience in the fighting of typhoid fever, yet, since my own experience in the typhoid fever line this last summer, I have been interested in the fight of typhoid fever, especially as to the way in which it has been combated in Germany, and I found a few very interesting points that will be of interest to you in our fight against typhoid here in Poughkeepsie.

Improvement of water supply and sewage systems are certainly of very great advantage and have good results, but there are other sources for infection that have nothing to do with water and sewerage and therefore are not touched by the improvements of these.

Successful fight against typhoid can only be accomplished with the help of bacteriology. Careful and definite identification of the disease germs and their destruction before they have time to spread and develop must be the war-cry for a successful fight.

The method of combating the spread of typhoid by trying

to prevent the bacilli from entering the body by sanitary improvements and by precaution of every person is laborious and inconvenient and the result is not satisfactory.

We cannot insist on the use of only boiled water for eating, drinking, washing, bathing, and so on; we cannot avoid eating fruit, butter, lettuce, ice cream or for that matter anything that has not been sterilized; then we should not eat bread for instance, or any other food that may have been handled by one who carried typhoid germs on his fingers.

We must go to the root of the evil, we must try to kill the germs as soon as we can get hold of them, as soon as they leave their breeding place, before they have time to pollute the water, milk and other food-stuffs.

Each typhoid patient must be the principal object in the fight against the spread of typhoid fever.

Each typhoid fever case is, in one way or the other, traceable to a previous typhoid fever case.

We must try to recognize each typhoid fever patient as early as possible and *we must prevent all his bacilli from spreading and infecting others.*

Exact and early diagnosis is the first requirement, and exact diagnosis can only be made by identification of the typhoid bacilli, and with the modern progress of bacteriology this identification is possible without doubt.

The modern bacteriologist can, in ninety-five to one hundred per cent. of the cases, find and identify the typhoid bacilli from the blood of the patient in the first week of the disease, before the Widal test becomes positive.

These researches have shown that typhoid bacilli are very apt to enter and remain in the gall bladder. The bile seemed to have a favorable influence on the growth and development of the typhoid bacilli. What relations there may be between this entering of the typhoid bacilli into the gall bladder and the formation of gallstones I cannot speak about to-day.

In a very ingenious way some investigators took advantage of this specific influence of the bile on the typhoid bacilli for its identification. They mixed a small amount of fresh blood from a typhoid patient, or even a blood clot—the serum of which had been used for the Widal test—with sterilized bile, put the mixture into the incubator and after twelve to sixteen hours the typhoid bacilli had so rapidly multiplied that it was not difficult

to identify them. The bile seems not only to foster the development of the typhoid bacilli but also to prevent the development of other bacteria.

In order to identify the typhoid bacillus with certainty and to distinguish it, for instance, from bacterium coli, there have been advised specific culture media, for example the litmus-milk-sugar-agar of von Drigalski and Conradi, on which typhoid colonies appear *blue*, while for instance bacterium coli shows *red* colonies; but this is not sufficient for identification. By using, besides the litmus-milk-sugar-agar, the grape-sugar-agar and a culture medium of whey with litmus—on all three of which the typhoid bacilli grow in a characteristic way—and the agglutination test, one can, as far as we know now, with certainty identify the typhoid bacilli.

After a sickness is characterized in this way as typhoid, immediate report to the Board of Health, isolation—preferably in a hospital—and disinfection of everything that comes in contact with the patient, and above all, of all the excretions, are absolutely necessary steps in the endeavor to exterminate typhoid fever.

And systematic examinations have shown that the excreta, especially urine and stool, contain living typhoid bacilli in a great number for some time after the fever has disappeared. As an average this discharge of typhoid bacilli lasts from two to three weeks after the fever, and of course the patient should not be discharged from isolation unless his urine and feces have definitely been found free from bacilli; but here one has found the surprising fact that a number of apparently quite healthy typhoid reconvalescents are discharging virulent bacilli for months—yes, *years*.

These so-called bacilli-carriers are of course a constant source for new infection; how to deal with these chronic bacilli-carriers is a problem not yet solved.

To show how frequent the bacilli-carriers are, I may mention that one investigator found twenty-three bacilli-carriers among 1,700 examined persons (1.4 per cent.). In one asylum there were found seven among 250 persons, that means two and eight-tenths per cent. As an average, perhaps about five-tenths per cent. of all people are bacilli carriers—that would mean in a population equal to Poughkeepsie about 120 bacilli carriers—120 foci from which infection may spread any moment.

The next step taken after a typhoid case had been recognized was to examine the urine and feces of all the persons of the same household or of all who had been in contact with the patient, with the surprising result that a number of persons who had suffered only from a slight intestinal disturbance or did not remember any sickness at all, were also found discharging typhoid bacilli. In all these cases disinfection must take place, and in this connection we must remember that we are so far not yet able to find the bacilli in the feces of typhoid patients in more than about thirty-two per cent. of all cases.

Then again one has tried to trace the infection back to other previous cases, to food or to infected water. It seems to me useless to talk about typhoid infection through water without ever examining the water for typhoid bacilli, or at least trying to, and I have never heard of this having been done in Poughkeepsie.

And there are a number of different methods to isolate and identify the typhoid bacilli from water. One has precipitated all the bacteria and made cultures on those culture media on which typhoid shows a characteristic growth; others have found that typhoid bacilli seem prone to collect on the surface of a quantity of water if it remains undisturbed for about forty-eight hours; another method has been to use a bouillon in which the growth of bacterium coli was hindered by an addition of coffein and the growth of other bacteria by the addition of Kristalviolett O.

To make a long story short, it is possible to isolate typhoid bacilli and to identify them from blood, urine, feces, water and any food; and after they are located they must be destroyed before they have time to spread. This would be the way ultimately to stamp out this disease.

But one city, Poughkeepsie, cannot do this alone. We, for instance, cannot get rid of the bacilli in the Hudson river if the other cities do not fight in the same way.

But here in Poughkeepsie we could and should get rid of all those cases which are due to contact infection, but to do that we should have a modern bacteriological laboratory to make all those bacteriological examinations and a disinfecting plant, for it is not possible to successfully disinfect in private houses without such an establishment and a trained disinfecter.

The typhoid fever patient himself is the ultimate source of all typhoid fever infections, and this source can be eliminated only by careful and complete disinfection.

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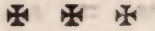
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Editorial

"There was an old doctor lived long ago
Who hired a fellow to shovel his snow,
But instead of a shovel he gave him a hoe
For he was a hoe-me-o-path, you know."

ANON.



The ANNALS from time to time has endeavored to give prominence to the practical features of medical work, and to show plainly how all that is done, even in ultra-scientific directions, makes for the good of the community. The refinements are not always immediately comprehended by the layman, and especially is it difficult for him to understand the money value of the provision made for the cure of disease. For this reason our institutions, and particularly our hospitals, are often subjected to unfair and indiscriminating criticism. It is hardly necessary now to dilate upon the greatly extended function of the hospitals. It is generally known that a surgical operation of magnitude worthy the name cannot be safely done elsewhere; and it is also recognized that many purely medical diseases can be managed much more advantageously in the hospital than in the home. It may be said of any serious, acute ailment that provision cannot be made in a residence against every possible crisis or complication. And local experience in Albany is now developing the great public benefit in the prevention of epidemics to result from the activities of the new pavilion for contagious diseases. When the statistical problem has been solved it may be expected to show that a relatively small proportion of the community are able to so isolate cases of diphtheria, scarlet fever and measles as to prevent the spread of these contagions. Some time may be needed for the laity to grasp the significance of these facts in all their bearings.

In a short résumé of the general subject published in the *Argus* of January 27th last, Dr. George E. Gorham has emphasized some most important considerations, and this timely article should do much good. Dr. Gorham writes especially of the financial question, and sends the matter home by citation of the following cases:

Mr. A., a clerk earning twenty dollars per week, on which he supports himself and his mother, comes from his room and small hall bedroom in a boarding-house and consults his physician, who tells him he has appendicitis and sends him to the Homeopathic

Hospital. The appendix is removed the same day and at the end of two weeks the clerk is at his desk, having paid the hospital thirty dollars and a small surgeon's fee. Would it have been possible to have put into his hall bedroom the necessary articles for an operation? Could the young man have conveniently paid twenty-five dollars per week for a nurse for two weeks? And who shall say that the young man's life was not saved by the timely aid a hospital gave?

Again, Mrs. B., who, because of a worthless husband, was supporting and educating four bright boys, was seriously ill with a local infection producing blood poisoning, which threatened her life and which in her home and by her family physician could not be successfully treated. She was removed to St. Peter's Hospital, where the surgeon operated without charge; the city paid the hospital bill for two weeks' board and nursing, when the patient was returned to her home and assumed the care of her family. Who shall estimate the value of the service which saved a mother's life and thus provided a home for the growing boys?

Miss C., who is the housekeeper for her father and two younger children, was found in a flat ill with scarlet fever. The physician sent her at once to Pavilion G of the Albany Hospital for contagious diseases, where the father paid twelve dollars a week for her entire medical and hospital care—forty-eight dollars for four weeks' treatment, when she returned home well.

Had this patient remained at home, the house would have been quarantined, the father kept from work, and the other two children from school, the total cost per week being, as calculated by Dr. Gorham:

Father's wages.....	\$40
Cook	4
Nurse	25
Doctor	14

Total \$83,

a difference of seventy-one dollars, or a saving to the father in four weeks of two hundred and eighty-four dollars.

Dr. Gorham concludes with an appeal for aid for the hospitals. Few cities are so admirably equipped with hospitals as Albany, and it is a subject of regret that such appeals need to be made. Knowledge, however, is rapidly spreading, and each admission brings in touch with the institutions an ever growing number of

friends. The time should not be far distant when every citizen of Albany and of every neighboring town within the circle of their influence, should feel and should demonstrate not only a personal interest but a personal responsibility in the maintenance of these most important institutions.

Little Biographies

XVI. BICHAT.

1771-1802.

MARIE FRANCOIS XAVIER BICHAT, the great French anatomist and clinician, was born at Thoir-ette in 1771. He was the son of a physician, and very early in life showed an interest in natural history and in medicine.

His preliminary education was received at Nantua and at Lyons. At the latter place he began his medical studies under Marc Antoine Petit. The French Revolution and the Siege of Lyons made it necessary for him to leave that city, and he went to Paris in 1793. Here he became a pupil of Desault, the leading surgeon of the period. It was Desault's custom to begin the class exercises with a review of the instruction of the previous day, by one of the students. On one occasion he had lectured on fracture of the clavicle; the man appointed to report this exercise being absent, the surgeon asked for some one to volunteer in his place. Bichat presented himself, and by the exactness of his analysis and by the suggestions he modestly offered, won the master's heart. Desault at once took him to live at his house and treated him as a son. Bichat repaid his kindness after the death of the famous surgeon, two years later, by carefully editing and completing his works and also by assisting in the support of his widow and child.

In 1797 Bichat began his career as a teacher by courses in anatomy and operative surgery. To these in the following year he added a course in physiology. At about this time he contributed three memoirs to the collections of La Société médicale d'Emulation, an organization of which he was a very active member. In 1800 he attracted the attention of the entire scientific world by publishing his "Traité des Membranes" and "Re-

cherches physiologiques sur la vie et sur la mort." Schopenhauer, the philosopher, held so high an opinion of the latter work that he would not allow his pupils to speak to him on the subjects of physiology or psychology until they had read it.

At the age of twenty-eight he was appointed by Napoleon physician to the Hôtel-Dieu. He took advantage of the great opportunities here offered him to study and classify diseases in a new and rational way, on the basis of pathological anatomy. His plan was to study patients carefully in the hospital, obtaining their histories and noting their various symptoms, and to examine carefully the bodies of all who died. His zeal in the study of pathological anatomy was such that in one winter he is said to have examined more than six hundred bodies. In addition to these procedures his plan of study included experiments on living animals. As a result of his work has come our modern recognition of cellular, osseous, fibrous and other tissues. By dissection, maceration and chemical means he differentiated twenty-one tissues without the use of the microscope. He was above all a practical man, believing in close observation and reading little. A short time before his death he said: "Si je suis allé si vite, c'est que j'ai peu lu; les livres ne doivent être que les mémorial des faits; or en est-il besoin dans une science où les matériaux sont toujours près de nous, où nous avons les livres vivants, en quelque sort, des morts et des malades." "If I have made some progress it is because I have read but little; books should be simply the record of things accomplished. Are they really necessary in a science where the materials are always at hand and we have before us as open books, the sick and the dead?"

One of Bichat's most ambitious undertakings was an attempt to reform therapeutics. He began in connection with his work in the hospitals an elaborate series of tests of various drugs, both singly and in combination. This work he was unable to complete. His physical equipment was not equal to the tasks he set before himself, and after a fall on the stairs in the Hôtel-Dieu he was attacked by a fever, said by some authorities to have been typhoid fever and by others consumption. His vitality had been impaired by his many activities, exhausting intellectual labor and long breathing of the foul air of dissecting rooms. He died in 1802 in the thirty-first year of his age. His funeral was attended by more than six hundred of his pupils. Under direction of

Napoleon, his bust, together with that of Desault, were placed in the Hôtel-Dieu, and some years later a memorial column was erected in his native town. Bichat also has a place on the front of the Pantheon. Anatomical structures named for Bichat are: "Bichat's Canal," the so-called "arachnoid canal," an alleged passage beneath the arachnoid for the veins of Galen, "The fissure of Bichat," a transverse fissure between the fornix and the upper surface of the cerebellum, and the "Foramen of Bichat," connecting the subarachnoid space with the third ventricle.

Bichat was possessed of a most attractive personality. Frankness and candor were his natural characteristics, and he was always ready to sacrifice his own opinions when valid objections to them were presented. He was not easily moved to anger or impatience and was as accessible in the midst of his most laborious pursuits as during his leisure hours. His generosity to his friends and to his pupils was such that he often relieved them when in financial straits. Buisson states that no one could resist his amiable and prepossessing manners, and that all who knew him were his friends except those who were jealous of his brilliant talents. At his death Corvisart wrote to Napoleon: "Bichat has just died on a field of battle which numbers more than one victim. No man in so short a time has done so much and so well."

ARTHUR T. LAIRD.

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Scientific Review

BLASTOMYCOSIS (OIDIOMYCOSIS) AND DERMATITIS COCCIDIODES (PROTOZOIC INFECTION OF RIXFORD AND GILCHRIST).

General. Since 1902 numerous articles and case reports have appeared on this subject, and with a view of bringing together the salient points this review is undertaken.

We have in this country what seemed at first to be two clinical types of skin infection with yeast-like organisms, one type confined to California, the other more widely distributed but most frequently seen in Chicago.

The former type, described first by Wernicke in 1890 (Buenos Ayres) and afterwards described in this country (1894) by Rixford and Gilchrist, has been termed Protozoic Dermatitis and Dermatitis Coccidioides. Nine cases of this disease have been recorded up to July, 1906, all originating in patients living in California or recently visiting there. All the patients have been males and all have died from the disease.

Of the second type fifty-three cases have been recorded, distributed as follows: Germany, four; France, two; Canada, one; United States, forty-six. So many of the cases have occurred in Chicago that it is sometimes spoken of as the Chicago disease. In their cutaneous manifestations the two types are very much alike and are clinically identical. The cases of dermatitis coccidioides, however, have all been general infections. The chief points of difference aside from this are confined to their biological characteristics, and these will be discussed farther on.

Differential Diagnosis. Clinically the great similarity of the lesions to tuberculosis verucosa cutis has been often commented on, and it is generally conceded that many cases have been overlooked because of this fact. The chief features distinguishing this disease from tuberculosis cutis are the rapidity with which the lesions spread and subsequently heal. The wart-like growths are larger and more succulent and the lesions are surrounded by a bluish red areola in which subcutaneous abscesses are often found.

The epithelial hyperplasia in the blastomycetic ulcers is so marked as to give rise to confusion with epithelioma but there are no metastases of epithelial cells either in the adjacent tissues or lymphatic glands. The miliary abscesses in the areola and the multiple lesions so distinctive of blastomycosis are not found in malignant tumors of the epithelium.

The ulcerative lesions may suggest syphilis, but ulcerating syphilitic lesions are usually tertiary, have serpingenous or carinate borders and in the advancing margins show ulcerations of a type characteristic of the disease. In very few instances of blastomycetic infection has a history of syphilis been obtained. Mercurials have no effect upon the disease.

Of particular interest are the reports of cases of systemic infection with blastomyces which apparently are occurring with ever increasing frequency. There are now seven unquestionable cases of systemic infection, five having been reported since 1902.

Systemic infection. Ormsby and Miller reported the third case. The patient, a Pole, gave a history of having taken cold which developed into a bronchitis with cough and blood-streaked sputum. He became very weak, emaciated and anemic. Two months later the first cutaneous lesion was noted and subsequently a large number of cutaneous and subcutaneous nodules and ulcers developed. The physical examination showed the presence of areas of dullness over the lungs, bronchial breathing and other evidences of pulmonary involvement. The voice became hoarse and ulcerations on the larynx were found. Pulmonary tuberculosis was suspected, but no tubercle bacilli could be found and no reaction followed the use of tuberculin. Death from exhaustion followed.

At autopsy abscesses were found in the lungs, liver, kidney, spleen, peritoneal lymphatic glands and larynx. Positive cultures of blastomyces were grown from the pus in these lesions.

The fourth case was recorded by Cleary, in which there was cough, hoarseness and expectoration, loss of weight and anorexia accompanied by edema of the feet and ankles. The urine contained albumin and hyaline casts. There were no cutaneous lesions. The condition of the urine together with the edema led to the clinical diagnosis of nephritis. The correct diagnosis was made at autopsy, when abscesses were found in the lungs, liver, kidneys, spleen, adrenals and myocardium. Pure culture of blastomyces were obtained from the abscesses.

Eisendrath and Ormsby have reported another case, the fifth, in which the first symptoms were pulmonary, cutaneous lesions not developing until four months afterwards. The patient, a Pole, thirty-three years old, soon became weak, emaciated and anemic. The pulse was rapid and the temperature elevated. Tubercle bacilli could not be found in the pus from the cutaneous abscesses or in the tissue excised. The tuberculin test was negative. Consolidation in the upper lobe of the right lung was found by physical examination. Marked improvement followed the use of potassium iodide and exposures to the X-ray and the patient left the hospital. Subsequently he suffered a relapse. The diagnosis of blastomycosis was made by cultures from the cutaneous lesions and the organisms were found in the sputum. Blood cultures were negative.

Bassoe's case was a boy of seventeen years complaining of pain in the lumbar region and a gnawing sensation in the right

lung. He had recently lost thirty pounds in weight. Following an injury to the right shoulder, a large abscess developed over the right scapula and later another abscess in the right lumbar region. Constitutional symptoms were marked. In the pus of the abscesses and in the sputum blastomyces were found. At autopsy, in addition to the abscesses already noted, there were a double psoas abscess, caries of the fourth and fifth lumbar vertebrae with disseminated blastomycosis of both lungs and necrosis of the mediastinal lymphatic glands. There were marked amyloid changes in the internal organs. Cultures at autopsy were negative. (Bassoe states that he has seen several other systemic cases in Chicago which have not been reported.)

The most recent case is one reported by Irons and Graham. The first lesion was cutaneous, a nodule on the inner side of the right thigh which later suppurated and became an ulcer. Six weeks later constitutional symptoms appeared—weakness, anorexia, emaciation and fever. At the same time the cutaneous lesions increased rapidly in number. There was edema of the feet and ankles. Six months after onset the lungs were involved and the organisms found in the sputum.

The blood cultures were negative, but cultures from the pus were positive of blastomyces. At autopsy miliary abscesses in lungs, spleen and thyroid cartilages were found. Erosion of the vertebrae from the seventh cervical to the fifth dorsal due to a retro-esophageal abscess and erosion of the left parietal bone. In the lungs the lesions were always located near the smaller divisions of the bronchi, pointing to infection by inhalation. Nothing can be added to the descriptions of the lesions given in the reviews of Ricketts and Hyde and Montgomery.

Atrium of infection. The method by which infection takes place is not clear. A history of trauma has been obtained in some cases, in others infection of the skin has occurred apparently through abrasions. In the systemic cases with primary pulmonary involvement the path of infection has not been found, although Irons and Graham suggest that it takes place by inhalation. There are possibly two ways of systemic infection, one through the blood stream from cutaneous foci and by inhalation in primary pulmonary lesions. The small amount of lymphatic involvement described in the cases reported is against the dissemination of the organism through the lymphatics. A single cutaneous focus spreads by auto-inoculation. Fabry and Kirsch

believe that in their case the lesions spread by infection through the ducts of the sebaceous glands.

Treatment. In the treatment the beneficial effects of potassium iodide in high dosage as recommended by Bevan are well known, but experience has shown that by the use of this drug alone permanent cures in extensive cases are not always obtained. Better results follow the combined use of the X-ray and potassium iodide, the rays liberating iodine in the tissues. More recently Bevan has recommended copper sulphate internally in one-half to one grain doses t. i. d. and locally in one per cent. solutions. He obtained fair results in one case by this treatment, and Irons and Graham noted improvement following its use in one case.

Concerning the excision, curettage and cauterization of cutaneous lesions attention has been called to the danger of systemic infection following these procedures. In the case of Busse and Buschke general infection followed curettage of an abscess on the periosteum of the tibia in eight months. In Walker and Montgomery's case symptoms of general infection followed shortly after curettage of the skin lesions. Similarly in a case of dermatitis coccidioides (Rixford and Gilchrist) general infection followed operative interference in ten and one-half months. In studying experimentally the effect of the X-rays on plate cultures of blastomyces, Otis and Evans found that they were not affected by exposures of ten to thirty minutes. Exposure to actinic rays seemed to kill the cultures, although the influence of heat could not be excluded. An interesting observation was made during these experiments that in plates covered with cedar oiled paper the growth was absolutely inhibited. No therapeutic use has been made of this observation.

Pathology. In the gross pathology of these cases no new points have been described. Microscopically the lack of inflammatory reaction about the lesions, particularly those in the lungs, has been frequently noted and is not at all commensurate with that seen in abscesses produced by the bacillus tuberculosis. A hyaline degeneration of the protoplasm of the plasma and giant cells has been frequently seen with the formation of globules of hyaline material often filling the entire protoplasm. By degeneration of the cells they are set free and form groups in the tissues. Krause found these hyaline bodies in the tissue from a case of blastomycosis in Unna's clinic and states that in his

opinion they are the organisms described as blastomyces in this country.

Unna mentions the close resemblance of elacin segments to blastomyces. Elacin (basophilic elastin) is often seen in short segments with rounded ends and somewhat globular in shape.

A marked tissue eosinophilia has been noted in some cases, particularly in cases infected with the mould fungus type of blastomyces.

Biology. Three types of growth have been described. a. Budding. b. Mycelial segments. c. Aerial hyphae. Without going into the details of their growth on the various media it is important to call attention to the polymorphism of their growth. The three types of growth are interchangeable, an organism growing only by gemmation will gradually change and grow by mycelial formation. This has been noted in numerous instances. With the same organism it has been observed that one culture will produce mycelia, while another will bud even though they are maintained under the same conditions. This fact is of considerable importance in classification, as will be seen later. The life history of the blastomyces has been worked out by Otis and Evans by a study of sections from the lung in a case of systemic infection. Seven forms of adult parasites are described, each form representing a step onward in development.

(1.) Small cells, five to ten μ , clear zone inside capsule, protoplasm globular, centrally or eccentrically placed, granular or homogeneous and deeply stained. Many budding forms.

(2.) Slightly larger, clear zone smaller, protoplasm more granular, containing one or more vacuoles. Many budding forms.

(3.) Clear zone obliterated by protoplasm, which is more granular and vacuolated.

(These are young forms.)

(4.) A large single vacuole in center, protoplasm a ring about the periphery with hyaline globules.

(5.) Division of peripheral protoplasm into spore-like bodies.

(6.) Cell collapsed and vacuole emptied.

(7.) A distinctive form containing no vacuole, but protoplasm divided into ten or fifteen small hyaline bodies. Otis and Evans could not follow the development of these bodies into adult forms or find any instance where they were set free by rupture of the capsule, yet they look upon them as spores.

They differ greatly from the sporulating bodies of dermatitis coccidioides which contain a much greater number of spores that are set free by rupture of the capsule. In one of the guinea pigs inoculated by Otis and Evans such cells containing many spores were seen.

The presence of brown pigment granules was often noted in the organisms, which is probably set free by disintegration of the parasite and accounts for the brownish pigmentation of the leucocytes and tissue cells in the lesions.

The development of the organisms in hanging drop cultures is also described by Otis and Evans. The budding cells often progressed to full development, but in some mycelia developed from budding cells, the segment apparently growing from the capsule and not always at the location of the beginning bud. After being placed on artificial media no new buds were formed, the growth being entirely by mycelia, which later became segmented, the protoplasm containing granules and vacuoles. In very old glycerine bouillon tubes the terminal segments became spherical and budded, finally developing torula forms.

Animal Experiments. For animals the organisms do not seem to be of a high grade of virulence. At the point of inoculation lesions are always produced, a nodule which suppurates forming an abscess or ulcer. Generally these are covered with a blood crust, beneath which a granular papillary surface is seen similar to the lesions in the human.

General infection from these inoculations do occur but not with any great constancy. The susceptibility of the different laboratory animals varies, and recently Bowen and Wolbach, after inoculating rabbits, guinea pigs, white mice and white rats, conclude that the white rat is more susceptible; at any rate this was true for the culture from their case. The lesions produced by a general infection in experimental inoculation are mostly abscesses in the lungs, liver, spleen and peritoneal lymphatic glands, which closely resemble miliary tuberculosis. Of the organs affected the lungs are most frequently involved.

The organism of dermatitis coccidioides has been carefully studied by Wolbach. The chief points of difference between this organism and that of blastomycosis is that it does not reproduce by budding but by the formation of endospores which are liberated from the cell by rupture of the capsule.

On glycerine agar the growth resembles *oidium lactis*, growing

as a radiating mass of segmented mycelia which penetrates into the depth of the media. In old cultures aerial hyphae are formed. The sporulating organisms contain large numbers of spores, often one hundred or more. From these, after being set free, mycelial threads develop, often many filaments from one spore. In tissue the organisms are frequently found in groups, due probably to the liberation of many spores at one time. The adult forms in tissue have practically the same appearance as blastomyces.

For guinea pigs and rabbits the organisms are very virulent, producing abscess in the tissues and organs which mimic tuberculous lesions very closely.

Classification. Ricketts is of the opinion that the organisms of blastomycosis are generically of one group or genus of which three types are recognized.

- (1) Blastomycetoid or yeast-like.
- (2.) Oidium-like.
- (3.) Hyphomycetoid.

These types differ from each other in their manner of proliferating the yeast-like form by budding the oidium type principally by mycelia and the hyphomycetoid type by aerial hyphae and mycelia.

In so many characteristics are the three types the same that these differences in biological growth do not offer sufficient reason for concluding that they belong to three separate genera but rather that they are but types of one genus. It has been noted by Ricketts and others that organisms of one type could under certain conditions take on the character of another type. This strengthens the view that they belong to one genus. Ricketts believes the organisms have characteristics which are most like oidia, and he proposes the name *oidiomycosis* to cover the group. In later references and reports, however, this nomenclature has not been adopted.

Concerning the position occupied by the organism of dermatitis coccidioides with relation to the organism of blastomycosis there is a difference of opinion. Wolbach proved the organisms he studied identical with that isolated from other cases of dermatitis coccidioides and that in its growth the chief variation from the organism of blastomycosis is the absence of budding and production of endospores. The point to be settled is whether these variations are sufficiently distinctive to separate these two organisms generically.

D. W. Montgomery believes they do not belong in the same group with blastomyces, and Hyde and F. H. Montgomery say they are closely allied if not types of the same process. It has been suggested that possibly the climatic conditions, the flora of California where all the cases of dermatitis coccidioides in this county have occurred, may be responsible for variations in the growth of the organisms.

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Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR FEBRUARY, 1907.

<i>Deaths.</i>					
	1903	1904	1905	1906	1907
Consumption	15	14	26	26	21
Typhoid Fever	3	1	1	1	3
Scarlet Fever	2	1	0	0	1
Whooping-cough	4	1	0	1	1
Diphtheria and Croup	0	1	1	0	4
Grippe	2	4	2	0	5
Diarrheal Diseases .....	....	....	....	2	4
Pneumonia	14	25	22	11	19
Broncho-pneumonia	3	6	5	5	8
Apoplexy	5	17	10	7	11
Bright's Disease	17	15	15	10	11
Cancers	2	6	10	13	8
Accidents and Violence	10	7	10	3	9
Deaths under one year.....	21	18	19	14	21
Deaths over seventy years.....	31	33	34	25	45
Totals	156	182	162	147	178
Death rate	20.32	23.71	21.11	19.15	23.18
Death rate less non-resi- dents	19.54	22.80	13.63	17.32	20.71

Deaths in Institutions.

	1902		1903		1904		1905		1906		1907	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital	12	5	10	3	15	4	19	11	7	9	8	9
Albany Orphan Asylum..	1	0	0	0	1	0	1	0	4	0	2	1
Child's Hospital .....	..	..	..	..	..	..	..	..	..	..	0	1
County House	4	2	3	1	3	1	5	0	5	2	0	0
Home for Aged	0	0	1	0	4	0	2	0	0	0	0	0
Homeopathic Hospital...	4	2	1	0	1	0	3	0	0	1	1	1
Hospital for Incurables..	1	0	0	0	1	0	0	0	0	1	0	0
House of Good Shepherd.	2	0	0	0	0	0	1	0	0	0	0	0
Little Sisters of the Poor.	1	0	1	0	0	0	1	0	0	0	0	0
Public Places	2	0	0	0	0	0	4	2	0	0	0	0
St. Margaret's House....	3	0	0	0	4	1	5	4	1	0	0	3
St. Peter's Hospital	6	0	2	1	5	1	5	1	3	0	9	3
St. Vincent's Female Or- phan Asylum	0	0	0	0	0	0	1	0	0	0	1	0

Births at term.....	54
Marriages	37
Still and premature births.....	5

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were two hundred and thirty-five inspections made, of which one hundred and thirty-four were of old buildings and one hundred and one of new buildings. There were thirty-eight iron drains laid, one connection to street sewer, two tile drains, two latrines, five urinals, fifty-seven wash basins, thirty-nine cesspools, fifty-eight sinks, forty bath tubs, thirty-four wash trays, one butler's pantry sink, eighty-four tank closets and four slop hoppers. There were thirty-six permits issued, of which thirty-five were for plumbing and one for building purposes. There were sixteen plans submitted, of which ten were of old buildings and six of new buildings. One house was tested on complaint with the Blue, Red test and there were twelve water tests made. Twenty-eight houses were examined on complaint and forty-four were re-examined. Eighteen complaints were found to be valid and ten without cause.

BUREAU OF CONTAGIOUS DISEASE.

<i>Cases Reported.</i>	1903	1904	1905	1906	1907
Typhoid Fever	10	5	4	1	13
Scarlet Fever	10	12	6	22	5
Diphtheria and Croup	14	16	4	7	41
Chickenpox	49	5	8	8	3
Measles	3	7	66	2	16
Consumption.	0	0	0	0	12
Totals	92	43	38	40	90

Contagious disease in relation to public schools:

	<i>Reported.</i>			<i>Deaths.</i>		
	D.	S.	F.	D.	S.	F.
Public School No. 1	1			1		
Public School No. 5	1					
Public School No. 8	1					
Public School No. 11	2			1		
Public School No. 14	4					
Public School No. 15	2			1		
Public School No. 16		1				
Public School No. 17	4					
Public School No. 22		1				
Albany Business College	1					
Cathedral School	1					
St. Ann's School	1					
Sacred Heart Convent	1					

Number of days quarantine for diphtheria:

Longest.....	42	Shortest.....	8	Average.....	21 16-26
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Number of days quarantine for scarlet fever:

Longest.....	55	Shortest.....	16	Average.....	36 1-6
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Cases of diphtheria reported.....	41
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Cases of diphtheria in which antitoxin was used.....	38
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Cases of diphtheria in which antitoxin was not used.....	38
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Deaths after use of antitoxin.....	2
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Fumigations:

Houses.....	47	Rooms.....	101
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BUREAU OF PATHOLOGY.

BENDER LABORATORY REPORT ON DIPHTHERIA.

	1903	1904	1905	1906	1907
Initial positive	13	17	2	2	32
Initial negative	77	65	9	12	54
Release positive	9	7	0	3	123
Release negative	8	9	3	4	222
Failed .....	....	....	....	....	25
Total.....	107	98	14	21	456

Sputum for tuberculosis:

Initial positive .....	....	....	3	0	7
Initial negative .....	....	....	1	5	6

MISCELLANEOUS.

Inspections of mercantile establishments.....	286
Mercantile certificates issued to children.....	7
Factory certificates issued to children.....	9
Children's birth records on file.....	16
Number of written complaints of nuisances.....	25
Privy vaults	7
Plumbing	14
Other miscellaneous complaints.....	4
Total number of dead animals removed.....	428
Cases assigned to health physicians.....	82
Calls made	237

BUREAU OF MARKETS AND MILK.

Milk dealers found to be out of business.....	4
Wagons and milk in clean condition.....	15
Wagons and milk in unclean condition.....	0
Ice on cans	0

No ice on cans.....	15
Butter fats below 3%.....	1
Butter fats between 3 to 3.5%.....	6
Butter fats from 3.5 to 4%.....	4
Butter fats over 4%.....	4
Solids below 12%.....	5
Solids from 12 to 12.5%.....	2
Solids from 12.5 to 13%.....	24
Solids from 13%.....	24
Meat condemned, lbs.....	56

BUREAU OF MILK.

BUTTER FATS.

SOLIDS.

No.	Specific Gravity Per Cent.	Under 3%	3 to 3.5%	3.5 to 4%	Over 4%	Under 12%	12 to 12.5%	12.5 to 13%	Over 13%
1.....	32.2	..	..	I	..	..	..	..	I
9.....	31.6	..	..	I	..	..	I	..	..
13.....	27.6	..	I	..	..	I	..	..	..
17.....	32.6	..	..	..	I	..	..	..	I
49.....	31.4	..	..	..	I	..	..	I	..
39.....	32.4	..	..	I	..	..	..	I	..
65.....	31.6	..	..	..	I	..	..	..	I
68.....	28.4	..	..	I	..	I	..	..	..
72.....	34.7	..	I	..	..	..	..	I	..
73.....	29.2	..	I	..	..	I	..	..	..
90.....	33.4	..	I	..	..	..	I	..	..
82.....	30.4	..	I	..	..	I	..	..	..
80.....	36.3	I	..	..	..	..	..	I	..
106.....	30.6	..	..	..	I	..	..	I	..
107.....	30.6	..	I	..	..	I	..	..	..

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

A regular meeting of the Medical Society of the County of Albany was held at the Medical College, Albany, Wednesday, February 13, 1907. The meeting was called to order at 8.45 p. m., the President, Dr. Lempe, presiding. There were present: Drs. Beilby, Cook, Curtis, Devoe, Hacker, C. G., Hinman, Holding, Jenkins, Keens, Le Brun, Lempe, Lipes, Lomax, MacFarlane, Moore, C. H., Morrow, Neuman, O'Leary, D. V., Jr., Papen, G. W. Sr., Pease, Rulison, Sampson, Shaw, Silcocks, Theisen, Traver, Vander Veer, A., Vander Veer, E. A., Wiltse; also Dr. Gravatte of Troy.

The Secretary, Dr. Laird, being absent on account of illness, Dr. C. H. Moore was appointed Secretary, pro tem.

1. *Reading of the minutes of the last meeting.*

The minutes of the last regular meeting were read and approved.

2. *Reports of officers and committees.*

Dr. SHAW reported for the Committee on Legislation, stating that suitable attention had been given to the various bills introduced, affecting the medical profession, such as those relating to Midwifery and Anti-Vaccination. He called particular attention to the so-called Osteopathic Bill and to the bill known as Senate Bill No. 154, Assembly Bill No. 160, providing for a single medical examining board, calling particular attention to the letter sent out by Dr. Root, Chairman of the Committee on Legislation, and the State Medical Society, and urging the members to write personal letters to their representatives in Assembly and Senate in favor of this measure. The President stated that the Albany County Medical Society was the only one that had not paid attention to this matter and urged the presence of members at the hearing to be held on the 21st of February.

The PRESIDENT read a letter from Dr. J. L. Archambault of Cohoes, thanking the Society for courtesies extended the family of our late Vice-President, Dr. Montmarquet. At the request of Dr. D. V. O'Leary, Jr., the President read the following resolution, in relation to the disposal of the ashes and garbage of the city:

Resolved, That the most important sanitary need in the City of Albany, is that all garbage and ashes be removed from the home by the City or under the supervision of the City government.

Be it further resolved, That the Secretary be instructed to send a copy of the above resolution to the Mayor and to each and every member of the Common Council.

Dr. O'LEARY then moved its adoption. Dr. C. G. HACKER seconded the motion.

Dr. MACFARLANE suggested that the matter be referred to the Committee of Public Health of the Society.

Dr. A. VANDER VEER moved as an amendment to Dr. O'Leary's motion that the matter be referred to a special committee of the Society. Dr. O'Leary accepted the amendment. The resolutions were discussed by Drs. O'Leary, MacFarlane, Hacker, A. Vander Veer, Curtis, Cook and Jenkins. The motion was put and carried. The President appointed as such Committee, Drs. O'Leary, Hacker and Jenkins.

The PRESIDENT presented a resolution, adopted by the Comitia Minora, to the effect that fifty dollars be paid to the ALBANY MEDICAL ANNALS as heretofore for the publication of the minutes of the Society.

Dr. SHAW moved its adoption, seconded by Dr. Holding.

The motion was put and carried.

Dr. A. J. BEDELL presented the name of Dr. F. C. CONWAY for membership in the Society. Referred to take the usual course.

Dr. HACKER inquired as to the action of the Committee on Public Health, regarding the placing of antitoxin where it could be readily procured at all hours.

Dr. COOK reported that such stations have been designated.

Scientific Program.

1. Exhibition of Pathological Conditions from an X-ray Standpoint, Dr. ARTHUR F. HOLDING.

2. Differential Diagnosis of Cerebellar Abscess and Pus in the Labyrinth, Dr. LOUIS LeBRUN.

Discussion.

Dr. THEISEN was much interested in Dr. LeBRUN's paper and believed that in the tuning fork we have a ready method of diagnosis in involvement of the labyrinth. As to vertigo being uncommon in cases of pus in the labyrinth in other forms of labyrinthine disease, it is common. He would emphasize the use of the tuning fork as an aid to diagnosis.

Dr. A. VANDER VEER expressed his pleasure in listening to the paper. Thirty years ago such a paper would have been a comfort to the general surgeon. Our specialists are doing great work in adding to our knowledge of brain surgery. This paper has been a helpful one.

Dr. WILTSE: This work was out of his field, yet many points apply to the field of general medicine. He would ask for information. If labyrinthine disease was present and nystagmus was not present, was there any other way of determining?

Dr. LeBRUN, in closing, stated that the tuning fork was used in the Politzer Clinic in making the diagnosis of labyrinth disease. It is of no use in the differential diagnosis between pus in the labyrinth and cerebellar abscess.

As to the diagnosis of pus in the labyrinth, if nystagmus was not manifest, it might in these cases be brought about by syringing the suspected ear first with cold water and then with warm. The patient would first complain of dizziness, then nystagmus would become manifest. Also by the galvanic current, anode in ear, cathode in hand of same size, will bring about nystagmus in these cases. Revolving on stool until patient experiences nausea, another method.

Dr. GEORGE E. BEILBY read a paper on The Use of Cocaine in Major Operations.

Discussion.

Dr. LeBRUN: He saw in Politzer's Clinic, when abroad, a mastoid operation performed by Dr. Neumann under local anaesthesia. The patient did not seem to experience any pain. Professor Politzer, who was not present until after the completion of the operation, was amazed that the radical mastoid operation could be performed in this manner.

Dr. A. VANDER VEER: This very interesting paper gives the consensus of opinion on the present use of cocaine in operation work. He was very much impressed when, at the time cocaine was first introduced, he saw Dr. Merrill operate on an eye made insensible to pain by its effect. He felt at that time it would be a valuable assistant in urethral surgery and soon tried it, making use of an eight per cent solution, soon using a

weaker solution, for sloughing would sometimes follow the use of the stronger. One day while operating for a stricture in the membranous portion of the urethra, using a two per cent solution, he noticed pallor, yawning and collapse, symptoms of cocaine poisoning, showing that there was some danger even in its use in this manner. The cocainization of the trunk of the nerve is something to be considered as to its advantages.

He has seen Dr. Beilby do thyroidectomy under this method. In operation for umbilical hernia by the same operator the patient, however, seemed to experience considerable pain.

Personally he does not like to do serious operations when the patient is conscious and able to talk; he prefers general anesthesia, which lessens the danger of untoward result from unforeseen action on part of the patient. By present methods of administering general anesthesia the nausea and attendant symptoms can be avoided. He has done appendectomy under cocaine without any bad effect. About ten days ago he operated upon a man, aged forty, for abscess of the medullary portion of the lower third of the tibia, and used cocaine. The incision in the skin and tissues caused no pain, but when the periosteum was incised, patient complained bitterly of pain. Four days later the same man was operated upon for removal of a fatty growth from the shoulder. Local anesthesia by cocaine was proposed and objected to by the patient, however, he finally agreed; the removal of growth was effected before the patient realized that the operation had been attempted. This paper will bear reading.

Dr. HINMAN: I have recently assisted in doing tracheotomy twice under cocaine anesthesia for malignant disease of the larynx, where the irritation caused by general anesthesia would have been dangerous to the patient, or impossible to administer. One-half of one per cent cocaine with one and twenty thousandths adrenalin gave bloodless and nearly painless operations. No shock.

Dr. BEILBY in closing: Umbilical hernia is not an ideal operation for local anesthesia. The rectal muscles are far apart and there is pain in approximating them. Regarding periosteal incision, the periosteum is a firm membrane and can not be infiltrated to any extent.

Dr. SAMPSON requested that owing to the lateness of the hour, his paper on "Conditions Resulting from Injuries to the Pelvic Floor and other Prophylaxis," be read by title.

Dr. NEUMAN moved that Dr. Sampson be requested to read his paper at the next regular meeting of the Society.

Seconded by Dr. LIPES. Motion put and carried.

On motion of Dr. JENKINS, the Society adjourned.

CHAS. H. MOORE, *Secretary, pro tem.*

GEORGE G. LEMPE, *President.*

Medical News

Edited by Arthur J. Bedell, M. D.

THE ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR FEBRUARY, 1907. Number of new cases, 121; *classified as follows*: Dispensary patients receiving home care, 1; district cases reported by health physicians, 9; charity cases reported by other physicians, 41; patients of limited means, 70; old cases still under treatment, 71; total number of patients under nursing care during the month, 192. *Classification of diseases* (new cases): Medical, 30; surgical, 17; gynecological, 6; obstetrical work of the Guild, 34 mothers and 31 infants under professional care; dental, 2; throat and nose, 1; three contagious diseases in medical list; removed to hospital, 3; deaths, 4.

Special Obstetrical Department Statistics.—Obstetrician in charge of cases, 1; medical students in attendance, 4; nurses in attendance, 3; patients, 4; visits by attending obstetrician, 2; visits by the medical students, 33; visits by nurses, 34; total number of visits in this department, 69.

Visits of Guild Nurses (all departments): Number of visits with nursing treatment, 1,341; for professional supervision of convalescents, 198; total number of visits, 1,539. Six graduate nurses and five assistant nurses were on duty. Cases were reported to the Guild by four of the health physicians and by thirty-five other physicians and by three dentists.

REPORTS OF ALL TUBERCULAR PATIENTS IN ALBANY.—Dr. Joseph D. Craig as Health Officer, has sent the following notice to the physicians of this city:

It seems probable that under the direction of the State Department of Health effective co-operation can now be secured between the different health divisions of the State in securing an inventory of persons affected with tuberculosis and their places of residence. It is proposed to have reported to the proper authorities all cases of tuberculosis, together with their location; to follow such report with a sanitary investigation of the premises on which such cases live; to ascertain the occupation of the cases and other pertinent facts; to investigate the conditions under which tuberculosis is commonly propagated and eventually to formulate such practical regulations for control as the interest of the public health demands. Your co-operation in this endeavor is requested.

The Bureau of Health of this city hopes to receive reports of all cases of tuberculosis in Albany and to properly index them, and from time to time to report the results obtained from any collective investigations that may be made.

You are earnestly requested to report all cases of tuberculosis occurring in your practice to the health officer upon a special card designed for the purpose. These cards will be sent to physicians upon request. The receipt of the report will be followed by an investigation, which will endeavor to ascertain from either the physician or family the person from whom or the place where the tuberculosis was contracted, together with

such other information as may seem reasonable and proper in conserving the public health. Printed circulars of information will be given to patients and friends explaining the nature of the disease and the most reliable means of preventing contagion.

Free bacteriological tests of sputum of tuberculosis cases will, as heretofore, be made at Bender Laboratory.

RAYBROOK STATE HOSPITAL FOR INCIPIENT TUBERCULOSIS.—An advanced copy of the unpublished report just submitted to the Legislature by the Board of Trustees of the New York State Hospital for Incipient Tuberculosis shows what remarkable results are being obtained by the proper treatment of consumption in this State. Out of a total of 114 patients who had incipient consumption when they entered this institution, ninety-six, or more than eighty-four per cent, are set down as "apparently recovered" upon their discharge after a residence of about six months. All told, 106 patients recovered as far as could be determined and forty-three had their disease arrested, while only thirteen of all the patients treated showed no improvement, and of these twelve were suffering from consumption in an advanced and aggravated form when they were admitted to the institution. These results obtained in treating 174 cases would have been declared impossible not many years ago when consumption was everywhere regarded as an incurable disease, but they are results that are being accomplished here and now in New York in a way that can leave no real doubts in the minds of even the most skeptical and conservative.

The report, however, points out a very unfortunate and regrettable state of affairs, general, so far as appears, throughout the whole State. Although 14,000 persons die from tuberculosis in this State every year, very nearly every one of whom at one time had the disease in an incipient form, and although many thousands now have the disease in this early degree, this sanatorium with room for only 160 patients never during the past year took care of more than 137 patients at one time. "The difficulty has been and still is," the trustees state, "to get people suffering from the disease to begin a course of treatment sufficiently early to secure the advantages which the State has placed at the service of those afflicted with this terrible disease and unable to bear alone the expense of fighting it. Not only do they suffer needlessly, but they become incurable and a menace to their own kindred and to the general public. The only hope is in education, and the trustees are instituting an inquiry into all the facts obtainable regarding the disease in the several counties of the State. Along with this study the Superintendent through addresses, publications and personal correspondence is reaching the majority of the physicians of the State, seeking their co-operation while informing them of the law limiting the applicants to those who have not passed the incipient stage."

On this point the Superintendent, Dr. Melvin P. Burnham, states "As a result of two and one-half years actual experience at this hospital, I find that incipient disease is practically unknown to the profession, save to those actually engaged in special work along this line, and as a result many cases are referred and admission to this hospital recommended in which the disease is in various stages of advancement."

A convincing proof that the cure for consumption lies in fresh air, good food and rest, and not in medicine, is shown in the financial part of the report where we notice an annual expenditure of but \$265.65 for medicines out of a total budget of \$108,640.57. The report is a creditable document and the institution of Raybrook is one that the citizens of New York State may be proud of. It is now for them to make use of it to its full extent and to take to their hearts the lesson that it teaches, that within a very few years we shall have a State Sanatorium of a size more nearly commensurate with the number of patients that should be obtaining treatment and training within its walls. In the treatment of consumption the people of this State have made a good beginning.

For the benefit of those who might take advantage of this free hospital situated in the heart of the Adirondacks, we quote from the law governing the hospital: "Every person desiring free treatment in the State hospital shall apply to the local authorities of his or her town, city or county having charge of the relief of poor, who shall thereupon issue a written request to the Superintendent of said hospital for the admission and treatment of such patient. Such request shall state whether the person is able to pay for his or her care and treatment. . . . No person should be admitted as a patient in the State institution without the certificate of one of said examining physicians certifying that such applicant is suffering from incipient pulmonary tuberculosis."

Such is the simple procedure necessary to secure admission to this hospital. Why do not the people of our State avail themselves of this splendid opportunity? Why do they wait? Consumption can be cured, but its cure is hardly to be effected without skilled medical advice and the rest, food and care that can be had to best advantage in a sanatorium. Such is Raybrook.

To the Medical Profession of New York State:—At the New York State Hospital for Incipient Tuberculosis there are thirty-five vacant beds. This is due to the fact that suitable cases for treatment, and for which the hospital was built, cannot be secured. Out of 940 applications for admission to the hospital last year 220 patients were, following examination, received for treatment, the remaining 720 being too far advanced to be accepted. Of the 220 received, sixty-five per cent only were actually incipient cases. The balance, on admission, were found to be suffering from more advanced disease and were reclassified at the hospital. This condition, considering the well-known curability of the disease in question in its early stages, should not exist in New York State to-day, where annually 14,000 people die of tuberculosis. There are approximately 50,000 consumptives in the State. Thousands of these must be in the incipient stage, losing all chance of recovery.

One of the chief purposes of the New York State Hospital is educational; it was designed to encourage early diagnosis and to supply the only ideal form of prevention while saving life. It would seem that incipient tuberculosis is an unknown, unrecognized disease, except by a few experts.

In the last annual report of this hospital it is shown that eighty-five per cent of incipient cases were discharged apparently recovered. This

Practical Points in the Diagnosis and Treatment of Diseases of the Skin; April 3rd, Errors in Diagnosis and Treatment; Don'ts in Dermatology; April 10th, Danger Signals from the Skin; April 17th, The Significance and Treatment of Itching; and also announce a lecture by Dr. William Seaman Bainbridge, April 24th, Some Phases of the Cancer Problem, illustrated by a series of cases, in the Out-Patient Hall of the Hospital, at 4.15 o'clock. The lectures will be free to the medical profession.

MEDICAL ERA.—The *Medical Mirror* and the *Medical Era* have been consolidated. The magazine will retain the latter name, the April issue being the first of the new journal.

INTERNATIONAL CONGRESS ON PSYCHIATRY, NEUROLOGY, PSYCHOLOGY AND THE NURSING OF LUNATICS, to be held at Amsterdam, 2nd-7th September, 1907. At its meeting held on July 24th, 1903, The Netherlands Psychiatry and Neurology Society unanimously decided to organize an International Congress on Psychiatry, Neurology, Psychology and the Nursing of Lunatics.

The Congress will consist of four sections: I. Psychiatry and Neurology, II. Psychology and Psycho-physics, III. Nursing of Lunatics, IV. Exhibition.

The Congress will be divided into two parts: General Sessions and Meetings of Sections.

In the General Sessions, chosen subjects will be dealt with by competent men who have been invited to that end.

At the Meetings of Sections, special questions will be discussed and criticism will be invited.

Any one taking an interest in Psychiatry, Neurology, Psychology, and the Nursing of Lunatics may become a member of the Congress.

The languages employed will be English, French and German.

United States will be represented by Dr. G. Alder Blumer, Providence, R. I.; Dr. Joseph Jastrow, Ph. D., Madison, Wis.; Louise G. Robinowitch, M. D., New York.

THE FIRST CONGRESS OF THE GERMAN SOCIETY OF UROLOGY.—The Congress of the German Society of Urology will hold its initial meeting in Vienna, October 2-5, 1907.

The provisional program includes:

I. Diagnosis and Treatment of Kidney Tumors. Discussion opened by Küstes of Marburg and von Eiselberg of Vienna.

II. Diagnosis and Treatment of Nephrolithiasis. Discussion by Küm-mel of Hamburg, Holzknecht and Kienbock of Vienna.

III. Albuminuria. Discussion by von Noorden of Vienna and Posner of Berlin.

SETON HOSPITAL.—Seton Hospital, the New York City tuberculosis institution, announces a vacancy in the house staff. The position is a salaried one. For further information address Dr. T. I. Abbott, 123 West 78th Street, New York.

CONGRESS OF POLISH PHYSICIANS AND SCIENTISTS.—The Tenth Congress will be held at Lemberg, Austria-Poland, July 22-25, 1907. Dr. F. E. Fronczak, of Buffalo, represents the United States.

PERSONALS—Dr. A. H. TRAVER (A. M. C., 1899) will sail for Europe May 8th.

—Dr. GERALD GRIFFEN (A. M. C., 1901) is contemplating a trip to Rochester, Minn., to see the Drs. Mayo.

—Dr. GEORGE R. GOERING (A. M. C., 1906) has moved from Utica to Florence, N. Y.

—Professor S. L. DAWES and Professor H. C. JACKSON will present a paper on the "Physiological Action, Elimination and Therapeutic Application of Sodium Cacodylate used Hypodermatically," before the American Therapeutic Society at its next meeting, Washington, D. C., May 4, 6, 7, 1907.

—Dr. FRED. C. CONWAY (A. M. C., 1906) has started practice at 320 S. Pearl Street, Albany.

DEATHS.—Dr. SAMUEL A. McDOUGALL (A. M. C., 1857) died at the home of his daughter at Jamaica Plains, L. I., February 8th, aged 76. He was one of the founders of the Massachusetts Dental Society.

—Dr. GEORGE TAYLOR CHURCH was found dead in his office, 365 Henry Street, Brooklyn, March 10, 1907. Dr. Church attended a course of lectures at the Albany Medical College, but was a graduate of Dartmouth.

Dr. GEORGE H. VAN WAGNER (A. M. C., 1881) died at his home in Wappinger's Falls, N. Y., March 19, 1907. Dr. Van Wagner was fifty-six years of age, and had been ill for a long time. He is survived by his widow and two sons.

In Memoriam

GEORGE H. THOMA, M. D.

Dr. George H. Thoma, a member of the Class of 1864, of the Albany Medical College, died at his home in Reno, Nevada, January 31, 1907, of meningitis. He was a pioneer and one of the most prominent physicians of his State.

Dr. Thoma was born in Montgomery County, New York, on the 14th day of October 1843. His father was a watchmaker, who had come to this country from Germany and engaged in the business of making watches when all timepieces were made by hand. Dr. Thoma pursued a literary education in Amsterdam, N. Y., and fitted himself for his medical studies there. After graduating from the Albany Medical College he enlisted in the army as assistant surgeon of the Second New York Heavy Artillery. He served in the army of the Potomac until Lee's surrender at Appomattox.

After the war Dr. Thoma returned to his native town and practiced there a year. Then the gold boom started in Nevada and Dr. Thoma fitted out a freight wagon and started west. He went as far as Salt Lake with his team and walked from that city to Austin, Nevada. He laid aside his medicine chest and took up the pick, mining for silver at Austin for a year. From there he moved to White Pine and took up the practice of medicine and later moved to Eureka, where he practiced for fourteen years. In 1887, Dr. Thoma moved to Reno, where he resided up to the time of his death.

Dr. Thoma married Miss Alice Wilsey of Sacramento, and, besides his wife, two daughters mourn his death.

Dr. Thoma owned a beautiful home in Reno, besides the Thoma-Bigelow building, and had large mining interests in Nevada. He was prominent in Masonic circles, having taken both the chapter and commandery honors in the blue lodge and the thirty-second degree in the Scottish Rite.

During his lifetime, Dr. Thoma was a loyal Republican and was high in the councils of his party. He was elected a member of the State senate from Eureka in 1884. From 1890 until 1894 he had charge of the State Asylum for the Insane.

He was a member of the Loyal Legion of Honor and of General O. M. Mitchell Post, G. A. R., of which he was past commander.

It is said of Dr. Thoma that in his death the State of Nevada has lost one of its strong men, and one of the builders of the Commonwealth.

JOHN N. WRIGHT, M. D.

Dr. John N. Wright, who graduated from the Albany Medical College with the Class of 1868, died at his home at Grand Gorge, N. Y., on December 21, 1906. Dr. Wright was born in Oak Hill, Greene County, N. Y., in the year 1840. When he was a small boy his parents removed to Gilboa, Schoharie County, N. Y., where his father operated a foundry for many years. Dr. Wright obtained his education in the district school in Gilboa, and at the seminary in Roxbury, N. Y. When the civil war broke out, he, with many of his associates, enlisted in the Fourth Heavy Artillery, N. Y. Volunteers, serving faithfully in all of its campaigns and taking part in all of the battles in which this regiment was engaged until that of "Ream's Station," one of the most hotly contested and sanguinary minor engagements of the war which resulted in the capture of most of this famous fighting regiment. He, together with the rest of the prisoners was marched to Richmond and first confined in Libby and then transferred to Belle Isle, where he endured all of the horrible suffering and want of those undesirable prison pens. After the close of the war he entered the office of Dr. Wm. Layman of Gilboa, for the study of medicine. After graduation from the Albany Medical College he went to Reedsburg, Wisconsin, where he remained and practiced medicine for one year, returning to New York State in May, 1870. In July of that year he married Miss Lanie E. Schermerhorn,

of Gilboa, N. Y., and established himself in Grand Gorge, where he practiced until his death.

Dr. Wright was active in Republican politics and served for several years as a member of the county committee. He was five times elected to the office of coroner, holding that office and also justice of the peace of the town at the time of his death. He also was postmaster during Presidents Garfield's, Arthur's and Harrison's administrations.

Dr. Wright was for more than twenty years a member of the Methodist Episcopal Church and held many of its offices.

Dr. Wright was a sufferer from asthma for many years, and died without warning, of heart failure. He was of a particularly sunny disposition, and had stored his mind with a well-remembered and ready fund of anecdote and humor, so that he had become a popular man in the community in which he practiced successfully for so many years.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS.

Atlas and Text-Book of Human Anatomy. Volumes I and II. By Professor J. SOBOTTA, of Wurzburg. Edited with additions, by J. PLAYFAIR McMURRICH, A. M., Ph. D., Professor of Anatomy at the University of Michigan, Ann Arbor. Quarto volume of 194 pages, containing 214 illustrations, mostly all in colors. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$6.00 net. Half Morocco, \$7.00 net. Philadelphia and London: W. B. Saunders Company.

This Atlas is an American translation of a German Anatomist, in which almost the entire Myology has been illustrated by beautiful multi-colored lithographic plates, with, however, the omission of the arterial and nervous distribution, by which means the student mind is not distracted. Other illustrations are in "half-tones."

It should be borne in mind that works of this class are not intended to cover the more detailed descriptions and scope of the General Descriptive Anatomies. The text in these volumes is therefore of necessity somewhat abridged, but thoroughly practical, concise and unencumbered. Nor is it the field of the "Applied" or "Regional" Anatomy, and therefore, many of the anatomical and surgical relationships are not included in the text, which is perhaps rather too silent concerning the important arterial and nervous trunks, relations, etc., from the standpoint of the surgeon.

It might be well regretted that such beautifully colored, and correctly illustrated tendons and muscle bellies of the palm of the hand, do not also indicate the course of the palmar arches and the nerve supply.

The cuts, in so far as they have embraced the Anatomy—Osteology,

Arthrology, Myology and Splanchnology, are of such a character, owing to careful coloring, as to create a vivid and lasting mental picture, and make these volumes a valuable addition to the anatomist's library upon these sections of anatomy, and are perhaps not be excelled by any reproductions of the original structures in clearness. To the student who may dissect either arteries or nerves, or as a reference for the neurologist or eye specialist, these volumes have no applicability.

The colored lithographs of the adult peritoneum, its reflections and folds and relations to the intestines, stomach, pancreas, etc., with the lesser peritoneal sac opened along the greater curve of the stomach, should be highly appreciated by both student and practitioner alike. They are in keeping with the high degree of excellence of illustration maintained throughout the entire atlas.

The delicate coloring of the cuts of the bones and ligaments and joint interiors, is thoroughly gratifying and cannot fail to leave a distinct and indelible mental picture upon the mind of the student.

In keeping with what has been said of the high grade character of illustration and practicalness and beauty of coloring, the male and female organs of generation are worthy of mention. It might be, however, regretted by the gynecologist and surgeon, that the important relations of the uterine and ovarian arteries, etc., to the broad ligaments, body and cervix of the uterus is not shown on the "Atlas."

The surgeon might also regret the omission of the arterial and nervous supply and relationships in referring to the anatomy of the male and female perineum. The illustrations of the lungs, heart and reflections of the pleura will be enjoyed by the student.

An atlas of human anatomy which conveys none of the important arterial and nervous relations, is of necessity, of only limited service to student, surgeon or specialist.

A supplementary volume in which the arterial and nervous systems, the hernial canals and their walls, etc., could be presented with as excellent illustrations, would greatly enhance the scope of usefulness of the Atlas among both student and surgeon.

The author is worthy of the appreciation of the interested professional and student body, for care and clearness, so far as the subject has been embraced.

WILFRED S. HALE.

A Text-Book of Diseases of Women. By J. CLARENCE WEBSTER, M. D. (Edin.) F. R. C. P. E., F. R. S. E., Professor of Obstetrics and Gynecology in Rush Medical College, in affiliation with the University of Chicago. Large octavo of 712 pages with 372 text-illustrations and 10 colored plates. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$7.00 net; Half Morocco, \$8.00 net.

In the preface of this volume the author states that he has endeavored to keep constantly before him the following aims:

1. To give prominence to the scientific basis of each subject under

consideration. For this purpose the most thorough attention has been given to modern researches in sectional and dissectional anatomy, histology, embryology, comparative anatomy, pathology and bacteriology, in so far as they bear on diseases of women, and the author has included the chief facts collected by himself in original investigations carried on during the past sixteen years.

2. To study clinical phenomena in their widest relationships.

3. To insist upon exercising caution in the adoption of therapeutic measures not yet thoroughly tested, especially of certain ones which have, in recent years, been recklessly advocated.

4. To give emphasis to methods which have proved satisfactory in the author's experience.

The author has carried out his plans and has presented the entire subject as fully as the scope and size of the volume permits. The chapter on anatomy is particularly good, as it includes the results of the writer's own studies of this important part of the subject. The general plan of the book is excellent, beginning with the anatomy (including embryology), then puberty and menstruation, the genital tract in relation to micro-organisms, neuroses in relation to the pelvic diseases, case taking and physical examination, minor therapeutic measures, surgical technique. After this the various gynecological conditions are considered, including a chapter on "appendicitis in relation to pelvic disease."

The work is a very creditable specimen of bookmaking, and while the heavy-glazed paper increases the weight of the book it adds to its general appearance and that of the illustrations. Two features which especially commend the book are the presentation of the anatomy of the pelvis and the descriptions of the methods of diagnosis and treatment (including operations) which have proved most serviceable in the hands of the writer.

J. A. S.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of GUSTAVUS P. HEAD, M. D. *Volume VII. Therapeutics. Preventive Medicine, Climatology, Forensic Medicine.* Edited by GEORGE F. BUTLER, PH. G., M.D., with the collaboration of GEORGE S. BROWNING, B. S., M. D., HENRY B. FAVILL, A. B., M. D., NORMAN BRIDGE, A. M., M. D., DANIEL R. BROWER, M. D., and HAROLD N. MOYER, M. D. Series 1906. Chicago. The Year Book Publishers, 40 Dearborn Street.

This book belongs to the series, two volumes of which have been reviewed in THE ANNALS, and, as its title shows professes to cover a very large field, but it must be confessed that while the facts stated seem to be accurate, the fertilizer is spread on very thin, excepting in a few spots where there are quite large lumps, the most noticeable ones being where adrenalin, hydrogen-peroxide, hyoscyamine, serotherapy and electrotherapy are considered. This book will undoubtedly prove of value to those practitioners who have neither time nor inclination to keep posted on current medical literature as published in the periodicals.

SPENCER L. DAWES.

A Practical Treatise on Materia Medica and Therapeutics, with Especial Reference to the Clinical Application of Drugs. By JOHN V. SHOEMAKER, M. D., LL. D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia; Physician to the Medico-Chirurgical Hospital; Member of the American Medical Association and the British Medical Association; Fellow of the Medical Society of London, etc., etc. Sixth Edition. Thoroughly Revised. (In Conformity with Latest Revised U. S. Pharmacopœia, 1905.) Royal Octavo, 1244 Pages. Extra Cloth. Price, \$5.00 net. Full Sheep. Price, \$6.00 net. F. A. DAVIS COMPANY, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

The sixth edition of Shoemaker's work differs from most of our text-books on materia medica in several respects. First: Instead of grouping the various drugs according to their physiological or their therapeutic actions as do most writers, they are arranged as they are in the pharmacopœia, that is, alphabetically, a method which will appeal far more to the practitioner than to the student or teachers. Second: While the present method of teaching materia medica is to give greater prominence to the physiological action and less to therapeutic application of drugs, the reverse of this seems to be Shoemaker's idea, for in almost every instance the latter occupies almost double the space of the former. This of course is but a sign of the rebellion against nihilism in medicine which has of late years been so persistently, not to say absurdly advocated by the pathologists, and will do much to popularize the book. Third: It is based upon both the United States Pharmacopœia and the British Pharmacopœia, so that the author is enabled to use such titles as carbolic acid, sulphonal, urotropin, etc., as authorized by the B. P., instead of the cumbersome titles found in the U. S. P. In addition, many new and unofficial remedies are described, both under their trade names and with their chemical formulas. Many remedial agents other than drugs are also considered, such as the Roentgen-Ray, Finsen Light, Actinotherapy, etc.

There can be no doubt that this book will be a popular one, especially with the practitioner.

SPENCER L. DAWES.

Nasal Sinus Surgery with Operations on Nose and Throat. By BEAMAN DOUGLASS, M. D., Professor of Diseases of the Nose and Throat in the New York Post-Graduate Medical School and Hospital. Illustrated with 68 full-page half-tone and colored plates, including nearly 100 figures. Royal octavo, 256 pages. Bound in extra cloth. Price, \$2.50 net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

The author's little book may be said to fill a place, because it combines in a convenient way the different operations performed in the nose and upon the accessory cavities.

A description of the various operations, including some devised by the author, is given.

The book is very handy and saves a great deal of time which would otherwise be spent in looking through special text-books for a description of some particular operation.

A very excellent description of the accessory sinuses is given.

The illustrations representing different sections of skulls, showing the sinuses, are very good.

C. F. T.

Self-Propelled Vehicles. A Practical Treatise on all Forms of Automobiles. By JAMES E. HOMANS, A. M. Fifth Revised Edition, entirely rewritten. New York. Theo Audel & Co., 63 Fifth Avenue, 1907.

"Self-Propelled Vehicles" as issued in the fifth edition is a careful, instructive and comprehensive treatise on automobiles. It treats the theory or description of parts in detail where it is desirable for the clear understanding of them, and their operation. Aside from the specific machines shown and carefully described, it treats of the essential parts and their functions of all automobiles. It is a valuable book not only for the owners of motor vehicles, but for those interested in the subject of motoring.

H. C. PEASE.

NEW YORK STATE MEDICAL LIBRARY

Edited by Miss Ada Bunnell, B. L. S.

Recent Accessions to the Library.

Brickner, W. M. Surgical Suggestions; Practical Brevities in Diagnosis and Treatment. New York, 1906.

Caillé, Augustus. Differential Diagnosis and Treatment of Disease; a Text-book for Practitioners and advanced Students. New York, 1906.

Findlay, Alexander. Physical Chemistry and its Applications in Medical and Biological Science, being a Course of Seven Lectures delivered in the University of Birmingham. London, 1905.

Harrington, T. F. (The) Harvard Medical School; a History, Narrative and Documentary. 1782-1905. New York, 1905.

Harvard University. Medical School. The Harvard Medical School, 1782-1906. Boston, 1906.

Hirschauer, Herman. The Dark Side of the Beef Trust; a Treatise concerning the "Canner" Cow, the Cold-storage Fowl, the Diseased Meats, the Dopes and Preservatives, and what takes place on the other side of the Partitions of the Packing Houses; by a practical butcher. Jamestown, N. Y., 1905.

James, S. P. First Report of the Anti-malarial Operations at Mian Mir, 1901-1903. Issued under the Authority of the Government of India, by the Sanitary Commissioner with the Government of India, Simla. Calcutta, India, 1903.

Kelly, H. A. Walter Reed and Yellow Fever. N. Y., 1906.

McCrudden, F. H. Uric Acid; the Chemistry, Physiology, and Pathology of Uric Acid and the Physiologically Important Purin Bodies; with a Discussion of the Metabolism in Gout. New York, 1906.

Mann, Gustav. Chemistry of the Proteids. Based on Professor Otto Cohnheim's "Chemie der Eiweisskörper." London, 1906.

Sargent, D. A. Physical Education. Boston, 1906.

Stevens, G. T. A Treatise on the Motor Apparatus of the Eyes, Embracing an Exposition of the Anomalies of the Ocular Adjustments and their Treatment, with the Anatomy and Physiology of the Muscles and their Accessories. Philadelphia, 1906.

Thresh, J. C. Preservatives in Food and Food Examination. London, 1906.

PERIODICALS

Bio-Chemical Journal. Liverpool.

Bulletin de l'Institut Pasteur. Paris.

Eos: Vierteljahrsschrift für die Erkenntnis und Behandlung jugendlicher Abnormer. Vienna.

Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie. Jena. Pharmaceutical Era. New York.

Presse Médicale. Paris.

Queen's Medical Quarterly. Kingston.

Still College Journal of Osteopathy. Des Moines.

Therapie der Gegenwart. Berlin.

Western Druggist. Chicago.

Zentralblatt für die gesamte Physiologie und Pathologie des Stoffwechsels. Berlin.

SURGERY

Edited by Albert Vander Veer, M. D., and Arthur W. Elting, M. D.

Transplantation of Thyroid Tissue into the Spleen; An Experimental and Clinical Study.

E. PAYR. *Archiv für klinische Chirurgie*, 1906, Bd. lxxx, H. 3, S. 730.

Payr, in an exhaustive way, reviews the work done in thyroid transplantation up to the present time and states that thus far no important results have been attained (and that within the last year it has seemed to have vanished from the field of clinical surgery). After discussing the adaptability of the spleen as a tissue for thyroid implantation and giving in detail the technic of this operation, he reports a study of 48 animals thus operated upon since 1902, in which clinical and pathological studies were made in which later the transplanted tissue was histologically examined. The results obtained in animals convinced him that the method might properly be employed in the human subject in conditions of *postoperative tetany*, *cachexia strumipriva*, *myxædema* and *sporadic cretinism*. He has employed this method in the treatment of one case of cretinism with encouraging results.

His conclusions are as follows:

1. The spleen, on account of its peculiar blood-supply, affords excellent nourishment for transplanted tissues. Circulation in the transplanted

tissue is quickly restored and as a result there is slight, if any, central necrosis.

2. The chief consideration against this implantation of tissue sections into the spleen is that it excites danger of hæmorrhage. Continued animal experiments have resulted in an improved technic which has obviated largely this danger, the transplanted tissue acting as a living tampon when properly introduced.

3. In the treatment of animals from which the thyroid had been removed, this transplantation enabled the animal to live for months, even as long as 300 days without symptoms. This argues that the transplanted thyroid tissue performed its normal function.

4. In the case of a six-year-old imbecile child (cretin), treated for three and one-half years in vain with thyroid administration, a large piece of healthy thyroid tissue recently taken from the mother of the child was transplanted into the spleen. The result 5 months after operation proved satisfactory from a physical and mental standpoint. (Slight increase in height and brightening of mental faculties). The treatment is indicated in congenital and acquired athyroidism or when there is defective thyroid function.

5. Organs with an internal secretion seem to adapt themselves better for transplantation than those with an external secretion. The former possess in the organism a greater independence for self-sustenance which shows in the transplantation as having a higher degree of vital energy.

Note—In the next number of this periodical (Heft 4), nine months having elapsed since the thyroid transplantation, the author reports very decided improvement in the child's mental condition.

GEORGE E. BEILBY.

The Advantages and the Limits of Local Anesthesia. (Die Leistungen und Grenzen der Lokalanästhesie.)

BRUNN. *Deutsche medizinische Wochenschrift*, Volume 32, No. 1.

By local anesthesia is understood a local paralysis of sensation which results when the peripheral nerve endings of the sensory nerves are rendered functionless or when the paths of conduction to the central nervous system are interrupted by the induction into them of various substances. Terminal anesthesia can be produced by cold or by the application of certain drugs which interfere with the function of the nerve endings. Those drugs especially suited for local anesthesia are, cocaine, eucain, tropacocain, novocain, stovain and alypin. All of these substances are protoplasmic poisons, which, beside their local action, may also cause general toxic symptoms as a result of their action upon the central nervous system. He emphasizes the fact that these drugs present much less of toxicity when administered in marked dilution than when administered in concentrated form. A very important accessory for local anesthesia is the limitation of the absorption, which prolongs and perfects the anesthesia. Such measures are, the interference with circulation; cold, produced by ether or ethylchloride; and, finally,

the application of the active principle of the adrenal. The latter drug, mixed in very small quantities with the local anesthetic, lessens its toxicity and improves the character of the anesthesia.

Cocaine, novocain and alypin are the local anesthetics best suited for admixture with suprarenin.

The local anesthetic can be brought into contact with the terminal nerve endings in one of two ways: First, by application to a mucous membrane, a serous membrane or synovial membrane, from which the anesthetic diffuses and causes anesthesia. This does not occur when these drugs are applied to the skin. When anesthesia of the skin is desired the drug must be injected beneath the skin.

The concentration of the solution used may vary considerably, but for injection purposes a solution of cocaine stronger than one per cent is never advised.

The writer considers the importance of local anesthetics in the different departments of medicine. The first to appreciate the value of the local anesthetics were the ophthalmologists, and a very great proportion of their operations are performed under such anesthesia. The same may also be said to be true of the rhinologists and laryngologists. There is less range for the application of local anesthesia in otology, but since the introduction of the adrenalin preparations there has come a greater range of application of local anesthesia.

In urology local anesthesia is of great value, especially in examinations and operations upon the urethra and urinary bladder, although it is probably of less value than spinal anesthesia. Local anesthesia has been of comparatively little value to the gynecologist. To the general surgeon it has been of the greatest value. Almost all of the so-called ambulatory surgery belongs in its domain, and practically all localized disturbances of the skin or subcutaneous tissues can be successfully operated upon under local anesthesia. Extensive phlegmons are not favorable conditions for its use. Many of the operations upon the head, face and nose can be very satisfactorily performed under local anesthesia. Tracheotomy, the removal of the superficial glands, and operations upon the thyroid may also be performed in this way. Resections of the rib, or removal of small tumors from the breast or axilla are favorable conditions for its employment. Of abdominal operations, gastrostomy, enterostomy, the incision of cystic tumors, and the closure of artificial ani can usually be satisfactorily accomplished under local anesthesia. Hernia operations, especially those of the strangulated character, are especially suited for this form of anesthesia. All operations upon the penis and scrotum, and a great many of those upon the anus and lower rectum, may also be considered within the domain of local anesthesia, as well as operations upon the fingers and toes.

The writer believes that novocain combined with suprarenin is an exceedingly satisfactory substitute for cocaine. He emphasizes the necessity for due consideration for the psychical attitude of the patient, and states that not infrequently general anesthesia must be employed because of psychical excitation. Children, women and excitable men are hardly to be regarded as satisfactory patients upon whom to use local anesthesia.

Therapy of Acute and Chronic Cystitis. (Die Therapie der akuten und chronischen Cystitis.)

S. EHLMANN. *Deutsche medizinische Wochenschrift*, Vol. 32, No. 49.

The most frequent form of cystitis is that which is caused by the gonococcus. The gonococcus always finds access to the bladder through the urethra, either directly by means of instruments and injections, or indirectly from a posterior urethritis or by means of the suction of the pus from the posterior urethra into the bladder through the activity of the perineal musculature, which is apt to result from excessive exercise of the lower extremities.

The writer states that an instrument should never be introduced through an infected urethra unless the two-glass test shows the second specimen of urine to be quite clear and free from pus. It is extremely rarely necessary to catheterize an individual with an acute gonorrhea unless there be an inflammation or abscess of the prostate, which can always be determined by a rectal examination. It furthermore follows that all forms of active movements of the lower extremities should be avoided as far as possible in cases of urethral infection, as well as in cases of acute infection of the bladder. In acute cystitis the patient, if possible, should always be put to bed and the treatment should be causal and symptomatic.

In the treatment of gonorrheal cystitis, in the writer's experience salicylic acid in some form or other has been of the greatest benefit as an antiseptic. In the subacute forms the balsams, santal oil, or gonosan may be advantageously combined with the salicylic preparations. Urotropin appears to be very much less effectual in this form of cystitis. Only rarely do the tenesmus, pain or hematuria demand special medication. Where such is necessary the writer advises the use of a decoction of uva ursi, with warm baths and the use of warm drinks in large quantities. If narcotics are necessary he prefers morphine, sometimes with cannabis indica in suppositories. If there is much hemorrhage from the bladder he prefers ergot in suppositories.

After the acute symptoms have subsided irrigation of the bladder with a two or three per cent solution of boracic acid is advised. As soon as the irritability of the bladder will allow it, certain of the silver salts may be used as irrigants, and of these the writer prefers the silver nitrate, strength from one to one thousand, to one to four thousand. Permanganate of potash is also at times of benefit. In using the silver salts, especially the nitrate, great care should be taken to wash out the bladder first with sterile water or boracic acid solution, in order that the silver may not be rapidly combined with any mucous or pus of the bladder.

In the forms of cystitis due to other microorganisms than the gonococcus, urotropin appears to be the most effectual internal agent, although the preparations of salicylic acid, benzoic acid and methylene blue are often of value. The same general indications for irrigation are to be observed as in cases due to gonococcus infection.

In cases of chronic cystitis urotropin is of the greatest benefit. The alkaline or neutral urine is fairly rapidly rendered acid by the urotropin and the bacteria disappear. Irrigation of cases of chronic cystitis, particularly with silver nitrate, is often of great benefit.

In cases of tuberculous cystitis the writer prefers the injection of an iodoform emulsion. This consists of iodoform, fifty grams; glycerine, forty grams; distilled water, ten grams; gum tragacanth, twenty-five one-hundredths of a gram. Of this a teaspoonful is used to five hundred cubic centimeters of water as an irrigation.

Occasionally it is necessary to do a cystostomy, either to relieve the painful spasms of the bladder or to afford better drainage for the pus. This is true of both tuberculous infections and non-tuberculous infections of the bladder.

The contraction of the bladder following chronic cystitis can be more or less overcome by continued dilatation of the bladder by fluids introduced through the urethra. The alkaline spring waters are to be used only in cases of cystitis with a neutral or acid urine, and in cases of alkaline urine, plain water is to be preferred.

NEUROLOGY.

Edited by Henry Hun, M. D.

A Contribution to the Study of the Dissociation of the Temperature and Pain Sense in Injuries and Diseases of the Spinal Cord. (Ein Beitrag zum Studium der Dissociation der Temperatur und Schmerzempfindung bei Verletzungen und Erkrankungen des Rückenmarkes).

J. PELTZ. *Archiv für Psychiatrie und Nervenkrankheiten*, xli, 3, 1906.

The so-called syringomyelic dissociation of sensibility, that is, diminution of the temperature and pain sensibilities, with preservation of tactile sensibility, may be observed, first, in diseases of the brain; second, in diseases of the peripheral nerves; third, in diseases of the spinal cord. Peltz's abstracts of numerous contributions to this subject in full, compares the pains of different diseases, adds some cases and observations of his own and thus gives a very complete review of the subject. His conclusions are stated as follows:

(1.) Disturbances of the temperature and pain sensibilities may be of cerebral, spinal and peripheral origin, as in hysteria, capsular or cortical hemiplegia, in compression and injury or diseases of the peripheral nerves, and in injuries and diseases of the spinal cord.

(2.) Spinal thermo-analgesia appears in syringomyelitis, in traumatic injuries of the spinal cord, in central hematomyelia, in apoplexies of the lateral tracts, in tabes, in pachymeningitis, spinal syphilis, in myelitis from compression and in chronic myelitis.

(3.) The topography of spinal thermo-anesthesia, that is, its distribution on the surface of the skin, is radicular.

(4.) In the spinal cord there exists a special tract for conveying

temperature and pain sensibilities which is distinct from the tracts which serve to convey tactile sensibility and the muscle sensibility.

(5.) The localization or the course of these tracts for conveying temperature and pain impressions is through the posterior root, posterior horn, anterior commissure of the gray substance, anterior lateral tract, and particularly the peripheral part of this tract, and probably Gowers' tract.

(6.) The tract for conveying temperature and pain impressions consists of two neurons; the cells of the first neuron lie in the spinal ganglia, the cells of the second in the gray substance of the opposite lateral half of the cord.

(7.) Unilateral lesions of the gray substance of the cord give (a) thermo-analgesia of the same side if it be confined to the posterior horn; (b) crossed thermo-analgesia if the gray substance in the neighborhood of the anterior horn is involved directly at the place where the secondary neurons are transmitted from the opposite side; (c) bi-lateral thermo-analgesia.

(8.) A circumscribed lesion of the gray substance always produces thermo-analgesia which is confined to a definite area of the skin in the form of a half-zone, and always indicates the exact spinal segment involved.

(9.) A lesion of the lateral tract always presents total crossed thermo-analgesia which travels upward from the toes.

(10.) The half-zonular or one-sided thermo-analgesia which arises from a lesion of the substance of the posterior horn begins usually immediately under the site of the lesion, and that which arises from a contra-lateral lesion due to a lesion of the gray substance in the neighborhood of the anterior horn, begins about four vertebræ below the site of the lesion.

(11.) The upper boundary of total crossed thermo-analgesia originating in the lesion of the white substance of the lateral tracts—including Gowers' tracts—is about five vertebræ below the site of the lesion.

(12.) The upper border of total crossed thermo-analgesia due to a lesion of the periphery of the lateral tract or Gowers' tract, lies about six vertebræ below the site of the lesion.

(13.) In the region of the upper border of crossed total thermo-analgesia is often found dissociation of the sensation of cold or warmth in which loss of the sensation of heat occupies the upper border, loss of the sensation of cold the lower border and the loss of the sensation of pain lies between the two.

(14.) The dissociation of the sensation of cold and of heat reaches its maximum by the use of plus 50°.

(15.) The upper border of the thermo-analgesia for temperature over plus 50°, that is, for 60°, 70°, 80°, etc., lies gradually deeper under the upper boundary of the thermo-analgesia for plus 50° and approaches the upper boundary of the analgesia from above down.

(16.) The upper borders of the thermo-anesthesia for temperature under zero, that is, for minus 5°, minus 10°, etc., lie gradually higher than the upper boundary of the thermo-anesthesia for zero, and gradually approach the upper boundary of the thermo-analgesia from below.

(17.) The upper boundary of the thermo-anesthesia for temperature between zero and 50° lies between the upper boundary for both of these temperatures.

Myatonia Congenita (Oppenheim).

LUDWIG ROSENBERG. *Deutsche Zeitschrift für Nervenheilkunde*, xxxi Bd., 1-2 Heft, 1906.

In 1894 Oppenheim discovered in children a localized palsy in the distribution of the ulnar nerve which he described as delayed development of the interossei muscles, and in 1898 he made the differential diagnosis between this condition and infantile paralysis. In 1900 he made the following observation:

"On several occasions I have had opportunity, especially in the last few years, to observe in children in the early months or in the first or second year, a condition which, so far as I know, has not been mentioned in the literature. The parents complain that the entire body, or more particularly, certain parts, particularly the lower limbs, remain flaccid and motionless."

The principal objective symptom is a striking condition of hypotonicity or actual atony of the muscles, associated with definite weakness or absence of the tendon reflexes. The flaccidity is so great that the extremity lies in a position of extreme extension of all joints, and there exists a more or less definite tremor. There is always diminution of active motility, varying in degree in different cases. In the parts where disturbance is most outspoken, the extremities lie motionless, as if there were complete paralysis. By more exact investigation, however, it is found that individual muscles or groups of muscles are involved, and these cause weakness and inability to walk. If the disease is only moderately developed, the hypotonicity is most pronounced, and the muscle-deficit is shown only in the incompleteness of certain movements. In only one of Rosenberg's cases was the disease so extensive as to weaken the musculature of the lower limbs and that of the trunk and neck, so that a child of eight months could neither sit erect nor lift the head. In this generalized distribution of the myatonia the muscles of the eyes, tongue and throat escape. The diaphragm also acts normally, although the intercostal muscles have been seen to be affected.

The muscles are atrophied, and in severe cases show quantitative loss of electrical excitability, or even complete loss, but only once has a sluggish response to the galvanic current been observed. There is no loss of intelligence, sensation or acuteness of the special sense, so far as it is possible to test these functions.

The disease appears to be a congenital affection, and is antipodal to Little's disease.

The lesion is probably located in the muscles. The prognosis is not entirely unfavorable, and entire restoration is regarded as possible, though the development of normal muscle conditions may require months or years.

The Significance of Cytological Examination of the Cerebrospinal Fluid.
(*Die Bedeutung cytologischer Untersuchungen der Cerebrospinalflüssigkeit für die Neurologie.*)

F. APELT. *Monatsschrift für Psychiatrie und Neurologie*, Band xx, *Erganzungsheft*.

The differentiating value of lumbar puncture has been actively discussed in Germany and France, particularly with reference to the diagnosis of certain nervous affections. Several investigators vaunted its importance, though Oppenheim believed it not certain in cases of tabes, cerebrospinal syphilis and alcoholic neuritis. Merzbacher believes that lymphocytosis is one of the most constant symptoms of general paresis, and Nissl agrees with this, but insists that it is only one manifestation, and is to be considered with others as an enormous increase of cellular elements as found in tabes, syphilitic infections, tuberculous and other forms of meningitis and also in alcoholism. He has also found lymphocytosis in patients years after a luetic infection. Merzbacher studied twenty-six patients with reference to this point, and all uncertainties rejected, determined lymphocytosis in 57.5 per cent.

The technique comprised the use of the tubes and pipettes of Nissl; the specimens were centrifugalized with a water-centrifuge giving 2,500 revolutions a minute and a pressure of three atmospheres. Small or large, clear or dark, mononuclear elements and larger, lightly tinted; irregular cells (endothelia) were seen. The specimen is first viewed with a small magnification of sixty to eighty diameters, which reveals by the abundance of cells, whether a "strongly positive" result is had, or simply a "positive result." With magnification of 350 to 450 diameters the number of elements in one field varies from sixty to 100 in the marked cases, and from eight to fifty or sixty in the other class. A pressure of over 150 millimeters of water was regarded as pathological.

Apelt made 150 examinations in 134 patients and summarizes the results as follows:

1. In general paralysis the cytological examination of the cerebrospinal fluid gives valuable confirmation of the diagnosis. Sufficient has been done in this direction to justify this conclusion. As to whether lymphocytosis is an early symptom or not, further work must be done.

2. In tabes the fact is established that a positive lymphocytosis is present, whereas in alcoholic multiple neuritis the reverse is true. Furthermore, this lymphocytosis is not only a definite symptom of tabes, but appears in the early stage. That the lymphocytosis in manifest and long-standing syphilis fluctuates at about fifty per cent., and is less frequent, is also a significant fact.

3. The determination of tabes in cases of neurasthenia with syphilitic history with symptoms resembling tabes cannot now be established by the lymphocytosis.

4. Of other organic nervous diseases as multiple sclerosis and cerebral tumor, an increase of lymphocytes has been found in a small number of cases.

5. Patients suffering with neuroses or other internal maladies, and

healthy persons present no lymphocytosis. When a positive result was obtained, there had been either a preceding lues or it was explained by certain physical symptoms as increased pressure or choked disc, suggestive of brain tumor.

The Treatment of Tetany with Parathyroid Preparations. (Ueber Behandlung der Tetanie mittelst Nebenschilddrüsenpräparaten.)

LOEWENTHAL AND WIEBRECHT. *Deutsche Zeitschrift für Nervenheilkunde*, 31 Band, 5-6 Heft, 20 December, 1906.

Gley, Vassale and Generali and Pineles and Erdheim have demonstrated a relation between the parathyroid glands and tetany with sufficient emphasis to induce Kocher as referee, to present a positive report upon tetany as due to a functional defect in these glands, and Kraus to admit the probability. Some doubt has resulted from animal experimentation and cases in man are yet too inadequate for positive statements. The first case investigated in this contribution is cited at some length. The patient suffered from childhood with goitre, and shortly after her marriage, in her twenty-eighth year, complained of stiffness of the hands. At thirty-seven there were strong spasms with mental irritability, and at thirty-nine bodily wasting, mental alteration, tonic spasm and cardiac irregularity. In the forty-third year the right lobe of the thyroid was removed, with lessening of the tachycardia and general relief. The tetany then became more pronounced and was accompanied by worry and diarrhea. The use of thyroid gland was without result; the diarrhea was controlled by rotagen. In the forty-sixth year the seizures of tetany were fully developed. The patient then presented symptoms of combined Basedow's disease (tremor, hyperidrosis, tachycardia, diarrhea, struma) and tetany, (tonic spasm, sensory irritation, anxiety). Under the use of fresh preparations of thyroid and parathyroid, the tetany disappeared, although the diarrhea and tachycardia remained. The glands were removed from animals with the adjacent connective and adipose tissues, cut fine and dried in a vacuum. It was difficult to establish a dosage, as the number of epithelial bodies must vary in these preparations. The patient, at one time in a critical condition, was decidedly benefited, and this improvement appeared to be definitely associated with the use of parathyroids.

In two other cases the results appeared less definite. In conclusion it may be said of the treatment of tetany by thyroid and parathyroid preparations:

1. In many, though not all, cases of tetany, a beneficial influence is exerted.

2. This influence is due to the accompanying epithelial bodies, that is, to the presence of epithelial substances in the glands used as food.

3. In the favorable cases an effect is produced quite the opposite of that which occurs in normal individuals, in that there are no loss of body weight and no "thyroidismus."

4. Congenital cases of "latent tetany" depend upon aplasia or functional defect of the parathyroid glands, and the tetany is manifest as soon as the chemical balance of the organism is disordered by toxic, autotoxic, infectious or psychic disturbances.

PATHOLOGY AND BACTERIOLOGY

Edited by Richard Mills Pearce, M. D.,

Assisted by Charles K. Winne, Jr., M. D., and Leon K. Baldauf, M. D.

Concerning Osteogenesis Imperfecta Congenita et Tarda. (So-called Idiopathic Osteopsathyrosis.) Zur Kenntnis der Osteogenesis imperfecta Congenita und Tarda. (Sogenannte Idiopathische Osteopsathyrosis.)

E. LOOSER. *Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie*, Band 15, Heft 1 and 2.

By the term osteopsathyrosis was formerly understood a condition characterized by a very striking and inexplicable brittleness of the bones. More recent investigations have, however, shown that this feature characterizes several different forms of bone disease. Osteopsathyrosis in its more narrow sense presents a characteristic symptom complex. It is hereditary; often occurs in several generations, although it may now and then skip a generation. The essential feature of the disease is an abnormal brittleness of the bones which leads, as a result of very insignificant injuries, to numerous fractures. Fractures begin in the early years of life as a rule, sometimes immediately after birth; at other times from twelve to fourteen years of age. In only a few of the reported cases has there been any evidence of rachitis. The fractures may involve any bone in the body, although they are most apt to occur in the long bones of the lower extremities. In some cases more than sixty fractures have been recorded as occurring in one individual. Fractures are usually associated with relatively little pain and heal very rapidly with a slight periosteal callus. As a result of the frequent fractures more or less pronounced deformities may develop. The general health of the patient is as a rule good. The disease seems to show a disposition to improve spontaneously at the age of from eighteen to thirty-six. Concerning the cause of this disease there is practically nothing known.

The writer reports in great detail an extremely interesting case occurring in a male, who in the period from one and one-half to seventeen years of age, sustained fifty fractures, forty of which involved the lower extremities. The great deformity resulting from these fractures necessitated the amputation of both legs, which afforded an opportunity for a careful study of the bones.

As a result of the microscopical study he has shown very clearly that the essential feature is an insufficient and subnormal activity of all the

bone-forming cells of the periosteum and the bone marrow. Bone absorption proceeds in practically a normal fashion and is apparently not increased. As a result of this insufficient production of new bone and the normal absorption of bone, the cortical bone becomes much thinned and the stability of the bone is markedly impaired.

The writer discusses in detail the macroscopical and microscopical features of bone diseases which have hitherto been confused with osteopsathyrosis and concludes that only one form of bone disease resembles it, namely, osteogenesis imperfecta. As a result of his studies he believes that these are practically two forms of the same disease, one of which occurs in intra-uterine or post-partem life, while the other is more or less delayed and usually occurs later in life. As a result of this study he proposes the name of osteogenesis imperfecta congenita et tarda, which is to embrace both of these diseases. He believes that they are both of them essentially congenital affections, the cause of which he has been unable to discover.

His conclusions are:

1. The so-called idiopathic osteopsathyrosis is clinically and pathologically a characteristic disease.
2. It is characterized by a deficiency of function of the endostal and periostal osteoblasts. The imperfect bone apposition is accompanied by a normal bone absorption.
3. The result of the imperfect bone apposition is a marked atrophy of the bone and a deficiency in thickness of the same.
4. The bone substance is decidedly more cellular, and the cartilaginous substratum is imperfectly calcified.
5. The epiphyseal cartilage is at first normal, and later may show some regressive changes.
6. The bone formation in the epiphyseal cartilage proceeds in a normal fashion, although less extensive.
7. The appearance of the epiphyseal cartilage demonstrates clearly two anatomical facts: a—that the growth in length of a bone is not dependent upon the activity of the enchondral bone formation, but is dependent upon the normal growth of the cartilage and the growth into this cartilage of the medullary spaces; and, b—that the epiphyseal bone grows independently of the enveloping cortical bone.
8. The bone marrow presents a normal appearance.
9. The so-called idiopathic osteopsathyrosis and osteogenesis imperfecta are pathologically identical affections.
10. The shortening and thickening of the long bones at times observed in osteogenesis imperfecta are traumatic in origin, the result of fractures and callus formation.
11. He believes it advisable to include under the term of osteogenesis imperfecta the cases of so-called idiopathic osteopsathyrosis.
12. The cases of osteogenesis imperfecta in the wider sense which develop in childhood are probably due to congenital disturbances.
13. As a cause of osteogenesis imperfecta in the wide sense, general disturbances of nutrition can be excluded. Whether there is a demonstrable congenital cause, it remains for time to demonstrate.

Thyroiditis Simplex and the Toxic Reaction of the Thyroid. (Thyreoiditis simplex und toxische Reaktion der Schilddrüse.)

F. DE QUERVAIN. *Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie*, Band 15, Heft 3, 4.

The writer states that since the publication of his extensive monograph on the acute infections and intoxications of the thyroid, several studies have appeared on this subject which seemed to demand some further discussion. He calls attention to the work of LaTouche and Dide, who investigated the thyroids of sixty individuals suffering with some form of mental disease whose death occurred as the result of some chronic disease, as marasmus, tuberculosis, circulatory disturbances, etc. They found a desquamation of the epithelial cells and changes in the colloid associated with more or less sclerosis of the gland. The sclerotic condition was especially noticeable in those individuals who had died of pulmonary tuberculosis.

Loeper and Esmonet have recently demonstrated that the normal epithelial cells of the thyroid are free from fat, while in infectious diseases and cachectic conditions fat may be present in considerable amount.

Crisafi studied the thyroids of children dead of infectious diseases and found swelling and discoloration of the epithelial cells, but nowhere except in the vicinity of tracheotomy wounds did he find any bacteria except in those cases in which there were clinical symptoms of a blood infection, in which instances the bacteria found in the thyroid were the streptococci and diplococci.

The results of thyroiditis have been considered by Bayon who agrees with the writer that as a sequel to the condition hypothyrosis and sporadic cretinism may result. He further calls especial attention to the relationship of alcoholism in the parents to cretinism in the children. The writer emphasizes the great necessity of distinguishing between what he calls thyroiditis simplex, which is the result of an actual infection of the thyroid and toxic thyroiditis, which is the result of the action of the toxins upon the thyroid. These toxins are usually produced in association with the infectious diseases.

The histological picture characteristic of thyroiditis simplex is an increase, degeneration and desquamation of the epithelial cells, a change and more or less disappearance of the colloid, the appearance of polynuclear leucocytes, small round cells and giant cells within the colloid and connective tissue organization. Most of these conditions may also characterize the toxic thyroiditis except the presence of the leucocytes, which the writer regards as a distinction of the greatest importance. In the former condition there is often more or less permanent destruction of the gland, with subsequent disturbance of function, while in the latter condition this, if it does occur, is extremely rare. The presence of bacteria in the thyroid does not necessarily indicate that the case is one of thyroiditis simplex, because these bacteria may simply be present in the circulating blood and the histological picture will be that characteristic of the toxic thyroiditis.

He regards toxic thyroiditis as quite analogous to toxic nephritis. He believes that both histological examination and experiment have afforded very little support for the view advanced that in association with certain diseases there was an increased activity of the thyroid which exercised a beneficial effect upon the course of the disease, that is, a hyperthyriosis. He believes that one of the essential differences between the toxic thyroiditis and thyroiditis simplex is that in the former condition the toxic elements are circulating in the blood, while in the latter condition they are produced in the gland itself and act in very much greater concentration.

The Pathology of Paroxysmal Hemoglobinuria.

JOHN EASON. *Journal of Pathology and Bacteriology*, XI, March, 1906.

The writer describes in some detail a series of experiments he conducted with the object of obtaining, if possible, some further light on the question of paroxysmal hemoglobinuria, and discusses at length the literature upon the subject. Space will permit only a brief summary of his principal work, and his chief findings.

The first set of experiments was performed with the constituents of the blood and with blister-fluid from two patients, variously treated and combined with one another and with the constituents of blood from a normal individual. The blood was obtained both during the paroxysm and in the interval periods. Some of the conclusions he draws from this part of the work are as follows:

"A pathological substance is present in the blood serum and blister-fluid of individuals affected with paroxysmal hemoglobinuria which can dissolve (in vitro) the corpuscles of the affected individual (autolysis), and also those of normal individuals (isolysis), provided suitable conditions as to temperature exists.

"The serum of normal individuals does not cause hemolysis. The serum of various individuals suffering from disease produced little and generally no hemolysis.

"The change in the red cells in course of solution correspond with those produced by the hemolysis of immune sera."

The conditions of temperature mentioned by the writer are, that the serum and the red blood corpuscles (*i. e.*, the blood) must first be subjected to a low temperature and must afterwards be raised to the normal temperature of the body; omission of either of these factors will prevent the hemolysis.

Experiments with inactivated (heated) serum show that there must be two components in the toxin, one (thermostabile amboceptor) combines with the red blood cells only in the cold, and the other (thermolabile complement) acts only at body temperature. This latter substance has been shown to be present in normal non-hemolytic serum.

The writer considers that these experiments have amply proven the following theory:

"1. That there is present in the body a potential toxin which becomes active only under certain favoring conditions, one of which is exposure of the blood to cold.

"2. That the potential toxin is composed of two bodies, one of which possesses the characteristics of an amboceptor, and the other those of complement.

"3. That the activity of the toxin, which is promoted by cold, is due to the special characteristics of the amboceptor. Paroxysms are thus caused, not, as some maintain, by the development of a toxic substance during the exposure to cold, but by the toxin, always potentially present in affected individuals, becoming active during such exposure."

In discussing the possible origin for the autolysin in the blood of affected individuals, the writer details from the literature several cases of hemoglobinuria associated with extravasations of blood; traumatic or otherwise, *e. g.*, ruptured tubal pregnancies, etc.; in fact some writers have published cases of true paroxysmal hemoglobinuria of apparently traumatic origin. Eason suggests that in such cases the extravasated blood may act as an antigene, and that the resulting antibody may not only dissolve hematoma, but may also act upon the circulating blood. Malaria and syphilis (often present in these cases) are also discussed as possible causes. His conclusions in this matter are as follows:

"1. While hemoglobinuria sometimes results from an effusion of blood, and cases of paroxysmal hemoglobinuria (Day's) are reported to have originated from previous trauma, sufficient data are not yet recorded to permit the etiological relation of trauma to paroxysmal hemoglobinuria to be affirmed or denied.

"2. While malaria and syphilis are fairly frequent antecedents of paroxysmal hemoglobinuria, the previous existence of either is not a necessary factor for the occurrence of this disease in an individual.

"3. Such considerations show the great importance of conducting a very full inquiry into the previous clinical history of cases as they occur."

The writer discusses the similarity between paroxysmal hemoglobinuria in man and hemoglobinuria in the horse, and mentions a symptom which occurred in his case I, which has hitherto not been described, *i. e.*, temporary paraplegia; thus bringing still closer the apparent relationship between the affections in the two species.

Another hitherto unnoted symptom spoken of by Eason is the fact that his patients did not become warm on exertion as normally, but on the other hand "became colder and colder, until they were forced to seek rest and warmth. Any attempt to become warm by greater exertion proved futile, and indeed had the effect of increasing their discomfort from cold, and finally of precipitating a paroxysm."

The writer's investigations of the metabolism of these patients as shown by a careful quantitative analysis of the urine does not lend itself to review, and the conclusions only will be given.

"Analysis of the urine shows that the total nitrogen per ounce of urine is diminished during paroxysms, but this may be due to the simultaneous excretion of large quantities of hemoglobin and albumin, causing nitrogenous retention.

"The primary general symptoms of paroxysmal hemoglobinuria can scarcely be attributed to such retention, as these symptoms precede the changes observed in urine.

"The ratio of urea nitrogen to total nitrogen is much altered during paroxysms, so that from the normal (eighty-four per cent) preceding the paroxysm it may increase ninety-nine and six-tenths per cent.

"The phosphorus excretion appears to be diminished during paroxysms; the ratio to total nitrogen is also reduced.

"Normal urinary pigments are much reduced in amount during paroxysms, and may be entirely absent.

"The activity of the liver is therefore apparently diminished during paroxysms, and the theory that hemoglobinuria results when the liver is called upon to transform an excessive amount of hemoglobin is thus erroneous, unless the liver is unable to do its normal amount of work."

Other conclusions of the writer are:

"Atmospheric cold and stasis of the peripheral circulation probably cause a reduction of the temperature of the limbs sufficient to permit the union of the intermediary body and red blood corpuscles. The further union of complement probably occurs most rapidly when the blood returns to the central organs.

"The chemical nature of the toxin is as yet not ascertained.

"Cold and fatigue may excite paroxysms in individuals affected with paroxysmal hemoglobinuria.

"The probable manner in which cold produces its effect has been already stated. I venture to suggest that the feeling of cold which is produced in affected individuals by prolonged effort throws some light on the manner in which fatigue produces paroxysms.

"Should my observation in reference to the production of the feeling of cold following fatigue prove to be true in all cases of paroxysmal hemoglobinuria, cold would then appear to be the essential preliminary to all paroxysms."

It is possible that the feeling of cold may be caused in such individuals by an abnormal fatigue-product which causes vasomotor spasm (Raynaud's symptoms).

Consideration of the occurrence of hemoglobinuria in horses seems to throw light upon the influence that fatigue has in producing hemoglobinuria.

The toxicity of the urine during paroxysms is distinctly diminished. The degree of toxicity does not vary proportionately with the urea or total nitrogen present. It varies more in accordance with the non-urea nitrogen and phosphoric acid.

Experiments on the toxicity of the urine of paroxysms when injected into rabbits showed nothing specially characteristic as regards symptoms.

Opinions are not agreed as to the relative number of leucocytes circulating in the blood during paroxysms and during intervals, but the most thorough observation already published indicates that there is a slight leucocytosis during the paroxysm.

LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

Edited by Clement F. Theisen, M. D.

*Tracheo-Bronchoscopy in Its Diagnostic and Therapeutical Aspects.*GUSTAV KILLIAN. *Laryngoscope*, December, 1906.

In an address delivered before the Thirty-fourth Congress of the German Surgical Society, the celebrated discoverer of bronchoscopy presents some new suggestions and new views based upon a clinical experience of ten years. He strongly recommends the method of simple upper direct tracheoscopy (diagrammatically represented). It may be carried out with the patient in the sitting position after cocainizing the larynx and trachea, or in the child under general anesthesia. It is admirably adapted to overcome all those difficulties for which the laryngeal mirror does not suffice, and its use has led to real revolution in the teaching of intra-tracheal affections.

We are not interfered with in our observation by the patient's lips, tongue or epiglottis, or by the vocal cords or intra-tracheal obstructions of any kind. Further, the examination may be carried out without pain or unusual discomfort. For the same reason, local treatment of intra-tracheal affections, which was formerly so difficult with the laryngeal mirror and under an anesthesia an impossibility, has been enormously simplified.

The author states, that he has had occasion almost daily to make use of upper direct tracheoscopy. In consequence of its position in the interior of the neck, and of the chest cavity, the windpipe is influenced by all morbid processes in these regions, which are accompanied by considerable changes of form and volume.

Alterations in position and form of the tracheal tube occur in many ways. Tumors of the anterior mediastinum and hypertrophies of the thymus, compress the lower half of the trachea from in front; aneurisms of the aortic arch cause bulging of the lower third from the left side and even simultaneously from in front or behind. Carcinomata of the esophagus, situated high up, compress from behind, enlargements of the peritracheal lymph glands from the sides.

The most frequent and most complex disturbances of the trachea are occasioned by enlargements of the thyroid. Their manifold forms and directions of development, of which the partly or entirely intra-thoracic deserve special interest, offer equally numerous problems for observation from within, *i. e.*, from the lumen of the trachea.

On account of its greater precision of observation, he prefers to make use of a tube examination in this region without limiting it to those cases which are difficult or impossible for the laryngeal mirror.

In considering the question of foreign bodies, Killian states that six years ago when he first introduced the subject of bronchoscopy in Munich, he carried all the foreign bodies he possessed in his waistcoat pocket. He has now a large collection. Up to the present time he has been able to collect eighty-seven cases. The statistical analysis of

these cases shows that by means of the tube introduced through the mouth or through the tracheotomy wound, the foreign body as a rule has been found or its absence definitely ascertained. The attempts at extraction carried out in this manner were crowned with success in nine-tenths of the cases. It is therefore quite obvious that it is surgical in the truest sense that we should guide the hand by the eye whenever that is possible. It may of course be open to question as to which route is preferable, the natural one through the mouth and glottis, or an artificial opening in the neck. The author on the ground of his experience much prefers the first.

Tracheotomy ought to be done only in cases of necessity where urgent dyspnea is present; where serious complications, more particularly in the lungs, have already set in; where the aspirated foreign body is unusually large or of irregular shape, pointed and sharp, so that in an attempt at extraction difficulties or injuries in the region of the larynx are to be feared, and where bodies prone to swell up, as beans, are, to judge from the duration of their stay and the stage of the disease, already macerated and softened.

The majority of cases, from two-thirds to three-fourths of the whole number, ought to be treated by upper tracheo-bronchoscopy, which must now be regarded as the established method. All cases suspected of having a foreign body should be investigated by it. The author emphasizes this fact in spite of the greater difficulties of the procedure from above. The difficulties are not such as cannot be easily overcome by knowledge and practice. The author prefers general anesthesia, with the hanging head, in all cases of foreign body both in children and adults. The author has lately had lateral openings made through the bronchoscopic tubes in order to facilitate respiration through the sound lung.

Lastly the author discusses the question, how may bronchoscopy assist in the surgery of the lung? The local affections of the lung form an object of surgical interference, and this depends upon the power to recognize such foci early, to ascertain their nature and to localize them accurately. To this end bronchoscopy can be of assistance, if the diseased parts stand in relation to the bronchial tube and especially to its lumen. It depends upon whether in larger bronchi accessible to the eye, changes in the wall, perforations, adhesions, and such like, have already occurred, or whether decomposition products of any kind from the foci, *e. g.*, secretions, hemorrhages, take place into the bronchi, in other words, whether these foci are open.

In the open foci there are two ways available for bronchoscopic diagnosis. The observer has in the first place to determine from which bronchial branch secretions come, and then to locate topographically and anatomically the affected branch.

The mode of procedure is to begin from the bifurcation and carefully note the openings of the chief branches during the downward passage of the tube. To each bronchus belongs a conical-shaped patch of lung tissue, into whose apex the bronchus passes, and whose base lies in the thoracic wall. The position of the base on this wall fixes at the

same time the place from which the focus may be reached surgically. But there is another and simpler way to obtain bronchoscopically more accurate details about open pulmonary foci. By chance observation, the author has found out that fine mops moistened with cocaine may be passed extremely far down through the smaller bronchi, without undue pressure or any harm whatever to the patient.

Measurement showed that he had certainly reached the neighborhood of the surface of the lung. Apparently the separate branches take a straight course to the periphery. In order to prove that a straight probe can actually penetrate so far, Killian has prepared a series of X-ray photographs which were taken in the living subject. By these photographs it is shown how far tubes down to five millimeters in diameter penetrate into the bronchi. It proves especially the possibility of entering the bronchus of the upper lobes in both sides, the right middle lobe bronchus, and the lower lobe bronchus of both sides, as far as the point where it suddenly breaks up into a series of narrow branches. A second series of X-ray pictures were taken while probes were passed towards the periphery through the bronchoscopic tubes. The region of the bronchus of the lower lobe is best adapted for this new bronchoscopic exploration of peripheral lung areas, but Killian has also penetrated quite as far with the sound in the right middle lobe bronchus.

In conclusion the author states that the bronchoscopic exploration of peripheral lung areas, will prove of practical value in the near future. He believes it appears at the right moment, for it comes at a time when by Sauerbruch's method, a new epoch has dawned for the surgery of the lung.

Concerning Primary Laryngeal Tuberculosis. (Ueber primäre Larynx-tuberkulose.)

MANASSE. *Fraenkel's Archiv*, Bd. XIX, Heft ii, 1907.

According to Schech, laryngeal tuberculosis, in rare instances, may occur primarily, without previous or existing tuberculous disease of other organs. Both Chiari and Schech, however, have only been able to find four cases of primary tuberculosis of the larynx based on autopsy findings.

The author reports another case: Mrs. M., aged fifty-five years, developed pain in the throat four weeks before coming under the author's observation. Dyspnea had been present for eight days. On examining the larynx, the mucous membrane was found to be reddened, with some infiltration of the vocal cords and ventricular bands. During quiet respiration, a sub-glottic swelling of the tracheal mucous membrane could be seen, which occluded the lumen of the trachea very much. The vocal cords approximated perfectly. The dyspnea increased to such an extent that tracheotomy had to be performed, after which breathing became easy. Patient died suddenly a week after the operation. The autopsy showed a fibrinous coating of both lungs and a cloudy exudate in the left pleural cavity. The mucous membrane of the bronchial tubes was ex-

tremely reddened, but free from cicatrices and ulcers. The small bronchi were considerably dilated and contained a thin purulent secretion. No old tuberculous lesions were found in the lungs. Microscopical evidence of tuberculosis was found in the larynx. There was a circumscribed tuberculous process of the lower half of the right vocal cord, with perichondritis of the cricoarytenoid articulation. The case was of interest because the autopsy proved that all other parts of the body were free from tuberculous changes, so that this must be considered a case of primary tuberculosis of the larynx.

Concerning Intubation Stenosis of the Larynx after Secondary Tracheotomy. (Ueber die Intubationsstenose des Kehlkopfes nach sekundärer Tracheotomie.)

FRANCK. *Deutsche medizinische Wochenschrift*, December 20, 1906.

The indications for secondary tracheotomy in cases of intubation of the larynx, which were first brought out by Wiederhofer, have had to be considerably modified. In the early days of intubation of the larynx, the knife was only resorted to when the patient's condition was hopeless, and as a result, the prognosis of secondary tracheotomy was absolutely unfavorable. At the present time, the consensus of opinion favors the earliest possible secondary tracheotomy, and the majority of physicians who are accustomed to intubate, favor this step, if the stenosis has not improved by the fifth day. The reason for this lies in the severe complications of a long continued intubation. Sooner or later, the dreaded decubitus of the larynx, with its alarming accompanying symptoms, develops. Only in exceptional cases is the larynx sufficiently tolerant for a prolonged intubation.

Siebert has shown that intubation mortality drops the earlier, and the more frequently secondary tracheotomy is employed. Late investigations have also shown, however, that even an early tracheotomy performed under favorable conditions, may be followed by the most serious results to the function of the larynx. It was shown that stenosis and even obliteration of a larynx that had been injured by long intubation, at times developed in an astonishingly short period after tracheotomy, and resisted all efforts at dilatation. This was first brought out by Wiederhofer in 1890, based on two cases of secondary tracheotomy, and as a result of the laryngeal stenosis the tracheal canulas had to be worn permanently, up to 1903. V. Ranke observed eight such cases, and they were also observed by others, so that secondary tracheotomy in cases of intubation decubitus, came to be regarded as playing an important rôle in the etiology of stenosis of the larynx.

The following illustrative case is reported:

A child, aged two and one-half years, was brought to the hospital with a diagnosis of diphtheria. The laryngeal stenosis was so great that intubation was at once performed. Antitoxin was also administered.

On the next day the tube was taken out but had to be reinstated immediately on account of the dyspnea. Extubation was practiced daily without result, there was beginning decubitus with painful deglutition, and a high tracheotomy had to be performed. Attempts to remove the canula did not succeed, and an examination made under an anesthetic, showed a complete stenosis of the larynx which could not be dilated. Laryngo-fissure was performed, and it was found that the larynx consisted merely of cicatricial tissue. No normal mucous membrane could be found. Several attempts to get an opening through the larynx were only partially successful, and the child had to be finally discharged still wearing the tracheotomy tube.

V. Ranke states that the cause of the laryngeal stenosis in these cases is not so much the pressure ulceration produced by the intubation tube, but the complete closing off of the larynx for respiration. Breathing being entirely through the tracheal canula, the widening influence of the air current is entirely lost for the larynx, and the chance for the formation of a cicatricial stenosis given. For the reason just given, it is best to remove the tracheal canula on the second or third day after tracheotomy, and go back to intubation. This method has been practiced by V. Ranke with excellent results. The author does not believe that even two or three days should elapse before the intubation tube is reinserted, because he has seen cases in which even a day after tracheotomy, the tube, which could before be easily inserted in the larynx, could only be replaced with the greatest difficulty, and sometimes not at all.

He therefore recommends intubation very soon after tracheotomy, but does not, because of the existing decubitus, allow the tube to remain in the larynx for more than two hours each day.

Concerning the Differential Diagnosis between Otitic and Metastatic Brain Abscess. (Zur Differentialdiagnose otitischer und metastatischer Hirnabscesse.)

OBENDÖRFFER. *Deutsche medizinische Wochenschrift*, October 4, 1906.

The author reports the following case to show the difficulties in diagnosing and localizing brain abscesses: G. W., aged twenty-five years, had for seven years a purulent discharge from the right ear. For four years he had been suffering from an almost constant cough with profuse expectoration. A week before his admittance to the hospital, he suddenly developed dyspnea, with convulsive movements of the left arm. He had a similar attack a few days later, followed by some difficulty in moving the left arm and leg. On physical examination of the chest, whistling Rhonchi were heard all over. There was a profuse purulent expectoration. No tubercle bacilli were found. The heart and abdominal organs were found normal. The urine contained albumen and a few hyaline casts.

Nervous system: Sensorium free. A slight paresis of the left arm was found. The left leg was held stiffly when patient was placed on his back. In walking, the left leg dragged, the left arm being held rigid, and away from the body. Reflexes: Patellar reflexes similar and rather exaggerated. No Babinski. Pupils similar, and reacted to light. Ear: Right tympanic membrane had been destroyed. There was a profuse discharge of brownish, foul smelling pus from the right ear. No symptoms on the part of the mastoid.

The patient complained of headache, and three days after he was admitted to the hospital, he had a severe attack of vomiting. Slight convulsive movements of left arm and leg were again noticed. The sensorium remained free even during the convulsive movements. Two days later the left-sided paresis had increased and patient was drowsy. Patient was sent to operating room with the diagnosis of a cerebral abscess, probably of the right temporal lobe.

At the operation, the dura was found practically normal. The brain was explored eighteen times in different directions, but no pus was found. The mastoid and tympanic cavity were then opened, but nothing particularly pathological was found. Patient died an hour after the operation. Autopsy showed both pleural cavities obliterated. Left lung was very oedematous. Bronchial mucous membrane swollen, reddened, and covered with foamy secretion. On examining the brain, the dura was found adherent to the skull at several points. The right hemisphere was larger than the left. In the middle of the right parietal lobe a large abscess cavity, filled with about thirty centimeters of thick pus, was found. The entire right tympanic cavity was found filled with granulations. A brain abscess of otitic origin, located in this part of the brain, is extremely unusual, as they are almost always located either in the temporo-sphenoidal lobe or in the cerebellum.

Heimann has collected 819 cases from the literature (the most complete statistics to the present time), showing that this rule is nearly always true.

Körner and others have, however, been able to collect eighteen cases, in which otogenous brain abscess occurred in other parts of the brain, as for example in the central convolutions, in the frontal lobe, fissure of Rolando, parietal lobes, optic thalamus and the fourth ventricle. Such abscesses must at times be regarded as metastases from otogenous sinus thrombosis, decubitus, and purulent bronchitis.

The author regards his case as belonging to this class, and is of the opinion that the patient's purulent bronchitis was the source of infection. Next to the traumatic and otitic brain abscesses, those resulting from pulmonary conditions, such as gangrene and abscess, pneumonia, empyema, bronchiectasis and putrid bronchitis, are most frequent.

ALBANY MEDICAL ANNALS

Original Communications

THE RELATION OF TUBERCULOSIS TO MUNICIPAL AND INDUSTRIAL LIFE.

*Read at the Twenty-third Annual Meeting of the Board of Trade of
Amsterdam, N. Y., January 14, 1907.*

By CHARLES STOVER, M. D.,
Chairman of Sanitary Committee.

When you note that there are annually 150,000 deaths from tuberculosis in the United States, that there are in the State of New York at this moment not less than 35,000 living victims of this disease, some consideration, first of the appalling waste of human life, and secondly of the means for its prevention, cannot fail to interest us.

Ten per cent. of the deaths in the United States from all causes are from tuberculosis. In the decade from 1896 to 1907, out of an annual average of 126,667 deaths in New York State, 13,365 were from this disease—about ten and one-half per cent. In the city of Amsterdam for the same period there was an average of 392.1 deaths, of which thirty-one and three-tenths were tubercular—about ten per cent. For the same period in Montgomery county as a whole, there were on an average fifty and nine-tenths deaths annually, which indicates that about three-fifths of all the cases occur in the city of Amsterdam, although the population is but one-half or less than that of the county. The loss to the state is the greater because these lives are given up, not at the end, but rather at the beginning, or in the midst of their active careers. Thus Prof. Osler states that the ancient opinion of Hippocrates is correct that the greatest number of cases occur between the ages of eighteen and thirty-five years, although no age is exempt, from the suckling to the octogenarian. Recognizing the communicability of this disease, state and national

governments have undertaken the cure of tuberculosis in isolated hospitals. New York State has Raybrook, in the Adirondacks, with accommodations at present for about 150 cases. The policy of the state is to provide only for incipient ones, or to put it in another way, for those most easily curable, so that the greatest number possible at the least expense, may be returned to continue their vocations. It is to relieve the state of pensioners, not to provide an asylum for the incurable. Unfortunately very many cases cannot avail themselves of a change of climate or a health resort or a sanitarium or tent colony life. It is stated as a fact that twenty-five per cent. of the families in the United States are living on \$400 a year or less. Now, from out of these homes and among these families quite a large percentage of tubercular patients come, hence they must remain under the care and observation of their family physician until relieved by art or released by death. States should take cognizance of this fact, for a nation's humanity and wisdom is nowhere better shown than in the care and safety it gives its helpless and dependent people. While the state is thus doing something in the care of victims of tuberculosis, can it be said that municipalities and corporations are doing all that can be done in this direction? In order to answer this inquiry we will later refer to some of the causes that are recognized as contributing to the production of tuberculosis.

It is unfortunate that a popular belief in the incurability of tuberculosis so widely exists. There has been an unmistakable decrease in the disease during the past decade. The records of New York city indicate this. Massachusetts, that was a hotbed of tuberculosis for so many years, has reduced the death rate very considerably in this particular. Glasgow, that keeps very careful statistics, has shown a very extraordinary fall in the death rate from tuberculosis. There are scores of people among us who have recovered by change of climate; change of occupation, or change of environment. There are scores of people among us who are destined to die of tuberculosis if changes in these respects are not made for them. If the city cannot go to the country, cannot something of the country be brought to the city to help these unfortunates? Pure air is a vital necessity, but of all needs, most sacrificed in the evolution of our civilization. Everybody knows that in badly ventilated rooms the air acquires a bad odor, especially noticeable on entering, and that persons

upon remaining sooner or later suffer. According to Prof. James, of Columbia University, of New York, the principal symptoms are a feeling of heaviness and oppression, headache, drowsiness, malaise, vertigo, tinnitus aurium (ringing in the ears), nausea and faintness. If the conditions are maintained for a longer time, there is loss of appetite, coated tongue, indigestion, nausea, constipation, and nervousness, and subsequently, if the evil be persisted in, the general health may be seriously impaired, secondary anemia and malnutrition being pronounced features, together with a general increased susceptibility to the infectious diseases. Consider for a moment that an individual breathes from fourteen to twenty times per minute, that is, he gets about 1,000 feeds of air in an hour. The primary object is to get oxygen to vitalize the system. Reflect that in rooms not equipped with proper ventilation the occupants breathe the expired air over and over, not of their own bodies alone, but that of others. To this foul air add the impurities, the gases, the dust and dirt of industrial life, and do you wonder that pulmonary disease is frequent? But the evil does not end there; the lowered vitality from imperfect oxygenation of the blood leads to many other ills in other tissues and other organs. The public school presents the same conditions operating upon very susceptible subjects. Some English doctor shows that where mechanical ventilation was applied to school rooms, the carbonic gas was three-fifths, the organic matter was one-seventh, and the micro-organisms less than one-ninth of what was found in schools ventilated by the usual methods. It may be asked what is considered good ventilation in a school room. Dr. D. F. Lincoln, a recognized authority on this subject, says the air should be furnished in a fresh volume of from forty to one hundred cubic meters hourly to each scholar, i. e., 1,400 to 3,500 cubic feet. Prof. Howell of Johns Hopkins, also places the necessary amount per hour at one hundred cubic meters. That is to say, if an individual occupied a room 20 x 15 and 10 feet high, there would be in it sufficient air for one hour, if it were possible to utilize it all.

If the room is spacious so that each pupil has 300 cubic feet of space the whole air-contents of the room might be evacuated from five to twelve times per hour. If the room, however, is small (say 200 cubic feet per head) the change must go on faster—the entire contents must be changed every three and

one-half minutes. Now this is done without causing a draught. But when the room is crowded, in order to keep up the standard, suppose the air is changed once in four minutes, there will then be a very great draught. Therefore, a closely packed room cannot be well ventilated, the inmates cannot stand the draught. The conclusion then is that each pupil should have about fifteen square feet of floor space, or better still, twenty.

One of this committee had his attention drawn to the fact that many children in the East Main street school had sore throats, due to exposure in the winter time by open windows raised for ventilation. Investigation showed that the janitor had been instructed by a member of the board of education to close the ventilators because too much coal was consumed.

There is occasion for a better system for cleaning the floors of the public school buildings. One of the janitors says that the occupation of the rooms limits opportunity during the day time, while the absence of illumination makes it impossible at night. Moreover the dry sweeping fails to remove the dirt satisfactorily. Moist sawdust might present some advantages. Father Browne, with his accustomed enterprise, has had installed at St. Mary's church and institute, a dustless pneumatic apparatus similar to that frequently seen in the large New York hotels.

The pinching poverty that obliges so many thousands to live in crowded tenements is the cause of deprivation of air. Thus in Glasgow, it was shown that in acute diseases of the lungs the death rate was as high as nine and eighty-five hundredths in the smallest tenements, and as low as three and twenty-eight hundredths in the largest. The rate is three to one. In the British army, in a period 1830-1846, the mortality from tuberculosis was seven and eighty-six hundredths per 1,000; in 1859-1866, when an increased cubic space per head was made, it fell from seven and eighty-six hundredths to three and one-tenth per thousand.

Dr. T. Mitchell Prudden, New York, says infectious diseases of the respiratory organs are steadily increasing; as people are more and more huddled together in offices, dwellings, conveyances, and places of public assemblage, a large part of these diseases are directly traceable to infectious cast-off material in the air.

In some of the broom factories in this city the moistening of the dusty broom corn lessened the baneful effect of dust upon the respiratory tract. Likewise the substitution of wet for dry

grinding was of great benefit to the grinders employed in the spring shops of the city. Two years ago in one of the industries of our city there occurred an unusual number of cases of pulmonary hemorrhage. It was thought that a very dry dust resulting from the manufacturing process carried on, was the cause of the trouble. The proprietors gave one of our physicians a free hand to suggest and apply a remedy. Unfortunately there was no precedent to be precisely applied, but by experiment and liberal expenditure of money, the introduction of suction and blowing apparatus has steadily improved the sanitary conditions, and pulmonary hemorrhages are no longer conspicuous. There can be no doubt about the life saving effects of these industrial changes.

It is summed up this way: The greater number of our people must live indoors and be more or less crowded together; conditions of health demand pure, fresh, unbreathed air; the air of assembly rooms is insufficient, more should be introduced, while foul air is removed.

Right here we are confronted by another difficulty, namely: The contamination of the air by commerce and municipal enterprise—another penalty paid for being civilized. Every municipality should be encouraged in an honest effort to maintain clean streets. Dry sweeping, as has been recommended for asphalt pavements, probably does prolong the life of the pavement, but it only displaces the dust and creates a nuisance to annoy pedestrians and adjacent house dwellers. Watering, of course, effectually settles the dust, but on stone surfaced roads it must be regularly repeated and this results in a muddy street, which is another nuisance. Moreover, it involves a considerable expense that few municipalities will be willing to incur, for it is assumed that individual effort cannot be relied upon. One man sprinkles his street front, but suffers from the dust of his less energetic neighbor. Some authorities advocate the use of crude petroleum, or thin tar applied on the surface or incorporated in the upper layers of the macadam road. Some of you have seen this in your auto trips about Saratoga and Albany. In California, where petroleum is cheap, it is said to be very satisfactory. In respect to sprinkling the brick pavement, that seems to be so generally popular, there is a conspicuous advantage. It can be sprinkled and even kept continuously moist without that disintegration of substance that marks asphalt when watered. It is submitted

that no pavement can be freed from its dust by dry cleaning alone; sprinkling must be supplemental.

Professor Tyndall and Monsieur Jean Binot both carried on experiments to determine the bacterial limit in the air, ascending Mt. Blanc for the purpose of observation. Near the mountain top it was found that no or few bacteria were found. The air of the country has fewer than that of cities; the open parks in cities are better than the slums near by. The ordinary streets are much like the slums; some of us can shun the latter, but we cannot shun the street. On a blistering summer day or in blustery March, a thimbleful of the pavement dust may contain from 900 to 160 millions of bacteria. This enumeration fails to indicate the significance of this statement, it marks the quantity but not the quality. Some of these bacteria are very potent for mischief. Think for a moment how many consumptives expectorate in the streets! The bacillus of tuberculosis has been found alive in sputa when kept dry for ten months. A rigid enforcement of the law against spitting in public places ought to be applied.

The whirlwinds of dust, formerly occasional, now made perpetual by the modern automobile and trolley car, permeate the dwellings so that few houses are freed from constant ravages by dust. It has been observed that the upper stories of houses and public buildings are the freest from this nuisance, a sanitary argument for the skyscraper.

When Morrell MacKenzie toured the United States he came to the conclusion that the dust of the cities, due to imperfectly cleaned streets, was the chief cause of the widely prevalent catarrhs that marked a national disease.

As another means of lessening tuberculosis the close inspection of the milk supply by our sanitary officials is to be encouraged. The relations of human and bovine tuberculosis cannot be ignored. There has been some question as to the communicability of the one by the other, the balance of authority being in the affirmative. But apart from this, inasmuch as pure milk is essential to infant feeding it is necessary that thousands of infants having a predisposition to tuberculosis, shall be safeguarded by good nourishment during the early years of life, for be it remembered that something besides the germ of the disease is essential to develop tuberculosis, i. e., a proper soil. Dr. Austin Flint likened it to a pair of scissors, one blade represent-

ing the bacterium, the other blade representing the soil. They must be united to be efficient. Herein lies the whole scheme for the prevention of tuberculosis or any infectious disease. On the one hand, to exterminate the bacteria, and on the other to raise the vital resistance of the individual by every means that contributes to better health, by pure food, pure air, pure water, pure soil.

A Massachusetts Agricultural Society reported a case where thirty-three per cent. of the calves fed from the milk of tuberculous cows succumbed to the same disease. Frequently milk and cheese made from such cows have been shown to be infected with tubercular bacilli.

Physicians have traced epidemics of typhoid and scarlet fevers to infected milk. As experience increases, more and more the means of conveying the various infectious diseases are found to be identical, varying only in degree.

Health boards have undertaken to standardize public milk, gauging it by the number of bacteria found in a cubic centimeter. It should be remembered that some bacteria are always to be found in water and milk, and that not all are harmful. As was said heretofore, the quality of the infection is to be considered. If a standard of 50,000 to the cubic centimeter is established no city of the first class would have its supply.

It is too bad to have to state it, but milk, with 100,000 per cubic centimeter must be allowed to meet the demand. Some milk shows one or two millions to the cubic centimeter. There is a certified milk (one with an official seal on the container) produced near Canajoharie, marketed in Schenectady and Albany, that in midsummer showed a test of only 600 to the cubic centimeter. Now what makes the difference? In a word, cleanliness. It comes from a model dairy, large and airy in construction, with asphalted floors, graded drains, water supply for flushing, groomed cattle washed down on flanks and udders, and tails tied up before milking, attendants' hands washed, white uniforms donned, all containers sterilized by steam, milk put by the milker in strainer in upper floor of milk house (a separate building) and delivered to bottler on lower floor in an aseptic room, where it is sealed and then kept at even temperature.

An epidemic of bowel trouble occurred in a child's hospital in a neighboring city using certified milk, and the milk was found to have suddenly gone wrong. Investigation showed that while

dry hay was being put in the loft of the cow stable, the dust of the hay had caused the outbreak.

Another source of contamination in the air is found in the burning of soft coal. We get in some measure accustomed to this while in the city, but observe it more particularly when approaching the city from the country, or when the laundry is hung on the line outdoors to dry. If we are enveloped by it for a brief moment by a passing locomotive, or some neighboring smokestacks, we protest, but must perforce continue to breathe it. What is it that we breathe? According to Dr. DeWitt C. Greene, whose interesting paper on this subject in the *Buffalo Medical Journal* for this month is liberally drawn upon, the gases that are included in the soot are carbonic oxide, carbonated hydrogen and sulphureted hydrogen. One ton of coal contains about sixteen pounds of sulphur which escapes into the air as sulphurous acid; a portion of this combines with the oxygen of the air to form sulphuric acid. This is destructive to vegetable and animal tissue, and therefore detrimental to the pulmonary tract of individuals, to the foliage in the landscape, and exceedingly ugly in its effect upon the monuments and buildings of a city. This smoke problem is by no means a new one. "About six hundred years ago when London had a population of only 50,000, the citizens petitioned King Edward I to prohibit the use of soft coal (which is the kind that to-day makes the smoke for our city) and he responded by making the use of soft coal an offense punishable by death."

At the present time in England, firemen and engineers are liable to a fine if their engines smoke unnecessarily. In Boston there is a law that no boiler will be allowed unless the owner agrees to use hard coal, or a smoke preventer. In Cleveland, where so much trouble occurred from smoke of railway locomotives, a record was kept of five different roads running into the city. A chart was used ranging from 0, no smoke, to 100, very dense smoke, and giving the length of time of observation. By judicious firing the amount was reduced from twenty per cent. to eleven per cent. It goes to show what care in stoking will do.

New York city has obliged the New York Central and Hudson River Railroad to use anthracite, and very little soft coal was used there before the great coal strike.

Buffalo has an ordinance against smoke from engines, but it is not enforced. In England, a member of Parliament has pro-

posed to electrify London by producing the current in the Midland coal fields and transmitting it to the city. It is estimated that the annual damage by the smoke nuisance in London is \$10,000,000. This plan Mr. Lupton thinks would do away with the furnaces and smoke producers and make London the sunniest and most beautiful city in the world. Dr. Greene states that in his neighborhood there is a manufacturing plant which has been in existence for years, during which time no annoyance was experienced by the neighbors on account of smoke. The plant changed hands May 1, 1906, the new firm continuing to use the same bituminous coal, boiler and engine. Soon the amount of smoke emitted became so great at times that the neighbors were compelled to close their windows and send out their laundry. This condition was relieved only by applying to the authorities. It is related by a carpenter who some time ago was employed in Pittsburg in the construction of a hotel, that it was so smoky that each carpenter was given six candles a day that he might be provided with sufficient light.

Anthracite coal, since it is found only in a limited area, principally in Pennsylvania, will always be dearer than bituminous, which is scattered throughout many states. It, therefore, is destined to be used. But is it therefore necessary to create a nuisance? Is there necessarily an antagonism here between commerce and sanitation? Munich has the reputation of being the most free from smoke of any manufacturing city in the world. Smoke consumers are used to take up the smoke. In this city are large foundries for making bells, bronzes, iron, machinery, steel wares, and fifty breweries, all using coal. In 1905 Munich had a population of 500,000. It may be that "smoke means industry," but cannot we have industry without smoke?

Finally, Mr. President, we may recognize the following as our chief weapons in fighting this disease: First, education of the public, particularly of the poorer classes who do not fully appreciate the chief danger of the disease. Secondly, the compulsory notification and registration of all cases of tuberculosis. The importance of this relates chiefly to the poor and improvident, from whom after all comes the greater danger, and who should be under constant surveillance in order that these dangers may be reduced to a minimum. Thirdly, the foundation in suitable localities by the city and the state of sanatoria for the treatment

of early cases of the disease. Fourthly, provision for the chronic, incurable cases in special hospitals. (Osler.) These in the main, relate to public hygiene, to official administration. What we have discussed to-night, however, belongs to a higher plane of action; namely, the prevention of disease. In the majority of all cases of tuberculosis the infection is by what is breathed with the air. Can we do anything to make the air better for ourselves and those more or less dependent upon us?

CONDITIONS RESULTING FROM INJURIES TO THE PELVIC FLOOR; AND THEIR PROPHYLAXIS.

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No matter how successful we may be in the treatment of our patients, prophylaxis always gives the best results. Prophylaxis manifests itself in two ways: first it is most important to prevent disease, but as this is not always possible, a second phase presents itself, namely, the prophylaxis of its incurable stage, if it has one, and also the prevention of conditions caused by the disease, whether they develop during the active process or afterwards.

In no department of medicine is prophylaxis of greater importance than in gynecology. The early diagnosis of the causes of uterine bleeding would result in the cure of a large percentage of that most dreaded of diseases, cancer of the uterus. If gonorrhea in men was treated more thoroughly, fewer wives would become infected, and one of the most frequent causes of sterility and of acute and chronic invalidism in women would be greatly reduced. We know that probably one ovarian cyst in every six is malignant, and furthermore that all ovarian cysts may undergo serious secondary pathological changes endangering the life of the individual, as twisting of the pedicle, infection, etc. An early operation is indicated in these cases in order to prevent any of the above-mentioned complications and also the incurable stage of cancer should the cyst be cancerous. The early recognition and operative treatment of extra-uterine pregnancy has been the means of saving the lives of many who might otherwise have

perished; and in those cases who would not have died as the result of the tubal abortion or rupture, the dangers of a secondary abdominal pregnancy or the invalidism resulting from a pelvic hematocele have been prevented. By the introduction of aseptic methods in obstetrical work, the maternal mortality from puerperal infection, in hospital practice, has been reduced from fifteen to less than one per cent. Still puerperal infection caus-

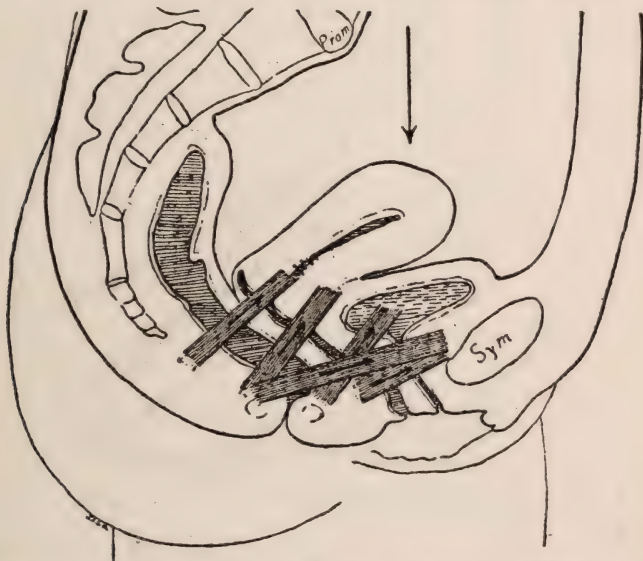


FIG. 1. Adult Female Pelvis Seen in Sagittal Section. $X\frac{1}{3}$.

Notice the oblique course of the rectum, vagina and urethra, thus in no way impairing the strength of the pelvic floor. The bands, with arrows, indicate the functions of the structures of the pelvic floor which maintain the oblique course of the canals passing through it and, by their strength, help support the pelvic contents; and, by their elasticity, permit of such functions as defecation, labor, etc., without impairing the usefulness of the pelvic floor.

ing acute or chronic sickness is of more frequent occurrence than it should be.

In this paper, I wish to consider the most frequent ill result of labor, and that is injury to the pelvic floor, and especially some of the conditions arising from these injuries if they are neglected, in order that we may see the importance of prophylaxis in these cases and how we may bring it about.

The pelvic floor is a strong, elastic diaphragm consisting of muscle fibers and fascia which give it both elasticity and strength.

Through this floor the urethra, vagina and rectum pass in an oblique direction in order that they may not impair its strength. (See Fig. 1.) The functions of this floor are to help support the pelvic contents and at the same time to permit of such physi-

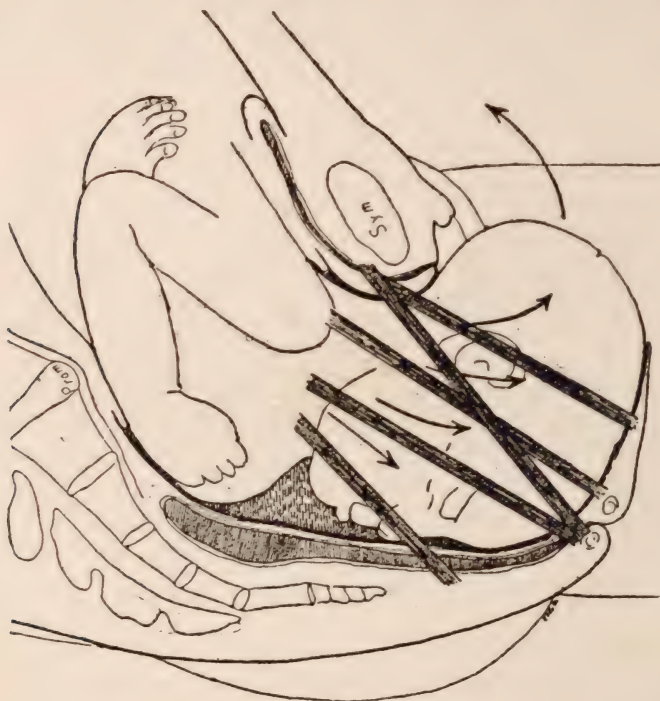


FIG. 2. Child-birth—Birth of the Head.

The structures supporting the pelvic floor are greatly stretched, see the bands. Under normal conditions the elasticity of these structures directs the head forward and prevents undue pressure on parts which might otherwise be injured and by their contracture, subsequent to labor, they permit the pelvic floor to be restored to its natural condition. In a prolonged, sudden, instrumental or otherwise abnormal labor these supporting structures may be so stretched or torn that the pelvic floor is unable to return to its previous normal condition.

ological functions as urination, defecation, copulation and child-birth without impairing its own integrity.

During childbirth the structures supporting the floor and maintaining the obliquity of the vaginal outlet are stretched, as indicated in Fig. 2. If the labor is a normal one, the elasticity and strength of the floor prevents injury to the parts involved,

and as a result of this elasticity and strength these parts are able, under suitable conditions, to recuperate and are thus restored to their normal conditions. On the other hand, if the structures of this floor are so *stretched* or torn that they are weakened, then, secondary pathological changes occur which

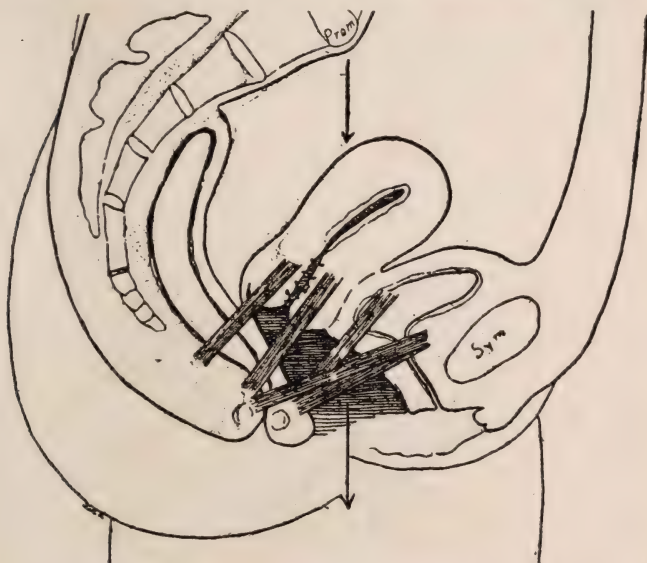


FIG. 3. The Pelvic Floor Weakened by a Recent Labor.

The structures supporting the pelvic floor have been stretched or otherwise injured so that they are unable to properly support it. The vaginal orifice gaps and the canal is less oblique and downward pressure from above is transmitted directly through it instead of being opposed by the structures which should maintain its obliquity. The loss of support is felt by the patient and is evident to the physician.

Prophylaxis lies in better obstetrics, i. e., the prevention of injuries or, if they occur, their immediate repair.

This condition may persist as such but is much more likely to undergo secondary changes with the formation of rectocele, cystocele, uterine displacements, etc., see succeeding illustration.

vary with the nature and extent of the injury, its situation, the strength of the natural supports of the pelvic contents in the individual case, and also the length of time the condition has been neglected.

CONDITIONS RESULTING FROM INJURIES TO THE PELVIC FLOOR.

In injuries, where the sphincter ani is still intact, the structures supporting the pelvic floor, and especially those drawing

it towards the symphysis, may be so stretched or torn that the entire floor becomes relaxed and the oblique course of the vagina is lessened or absent so that intra-abdominal pressure is transmitted directly through the vaginal outlet. (See Fig. 3.) The rectum becomes distended with fecal matter and, if the posterior vaginal wall is weakened, it pushes this forward, and in like manner the anterior wall of the weakened vagina may be pushed backward by the distended bladder. (See Fig. 4.) On strain-

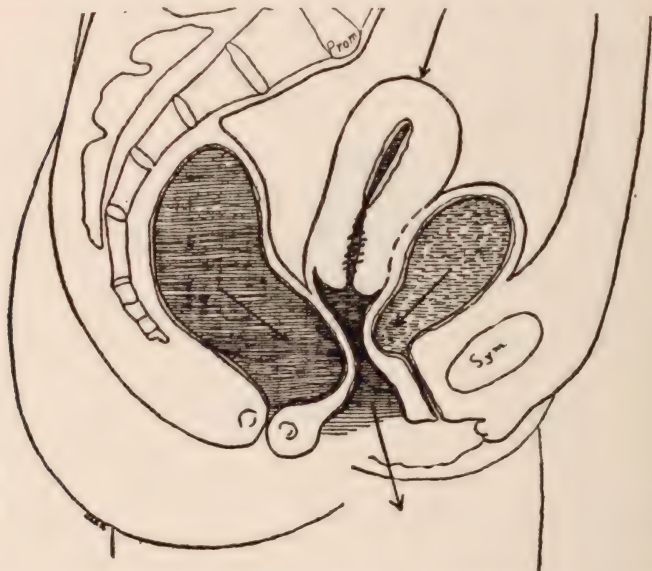


FIG. 4. The Pelvic Floor Weakened by a Recent Labor—Distension of the Rectum and Bladder.

The injured pelvic floor is unable to oppose the distended rectum and the latter bulges forward; in like manner the distended bladder bulges backward and both partly fill the gaping vagina. Pressure from above exaggerates this condition and tends to force the pelvic contents through the vagina.

Defecation is often very difficult because the weakened floor permits the lower end of the rectum to be pushed down, instead of holding it firmly in order that the sphincter ani may be overcome.

ing, these conditions are aggravated, and if the patient is constipated, as such cases are so apt to be, the relaxed floor makes it very difficult to overcome the action of the sphincter ani muscle. The condition is thus apt to cause constipation and constipation in turn aggravates the condition.

As has been stated, the conditions resulting from a weakened

floor vary with the extent and situation of the injury, its duration unrepaired and also the strength of the natural supports of the pelvic organs, and especially those of the uterus. On this account, the following groups of cases may be considered:

- (1) Those with a generally relaxed or weakened pelvic floor.
- (2) Those with a rectocele as the prominent feature.
- (3) Those with a cystocele as the prominent feature.
- (4) Those with uterine displacements either independent of or caused by the weakened pelvic floor, which may be subdivided as follows:
 - (a) Retroversion and beginning descensus.
 - (b) Prolapse of the entire uterus.
 - (c) Elongation of the cervix and uterine descensus.
 - (d) Retroflexion of the uterus.

THE GENERALLY RELAXED OR WEAKENED PELVIC FLOOR.

In this condition the pelvic floor is unable to properly perform its function, there is usually a slight rectocele or cystocele, or both, as well as a beginning descensus of the uterus. The patient feels the sense of a loss of support; and the relaxation can well be tested by introducing a finger into the vagina and pressing downwards. While this condition may persist, as such, it is usually an early stage of one of the succeeding groups.

RECTOCELE RESULTING FROM A WEAKENED PELVIC FLOOR.

Distension of the rectum and straining, especially that incident to constipation, stretches the rectal and vaginal walls. If the pelvic floor has been sufficiently injured at this place a localized dilatation of the rectum will be formed, which, carrying with it the weakened posterior vaginal wall, protrudes into the dilated vaginal canal or even out of the vaginal orifice. To this localized dilatation of the rectum, a form of hernia of the rectum through the weakened pelvic floor, the name rectocele has been given. (See Fig. 5.) The stretching of the posterior vaginal wall drags the cervix downwards and forwards, and as a result retroversion and descensus of the uterus will occur unless the other uterine supports are sufficiently strong to prevent it. One can readily see how straining and constipation would aggravate this condition and what an important part they must play in its development, maintenance and further growth. The size

of the rectocele depends upon the nature of the injury, its duration unrepaired, and especially on constipation.

CYSTOCELE RESULTING FROM A WEAKENED PELVIC FLOOR.

A cystocele consists of a localized dilatation of the posterior bladder wall carrying with it the dilated anterior vaginal wall,

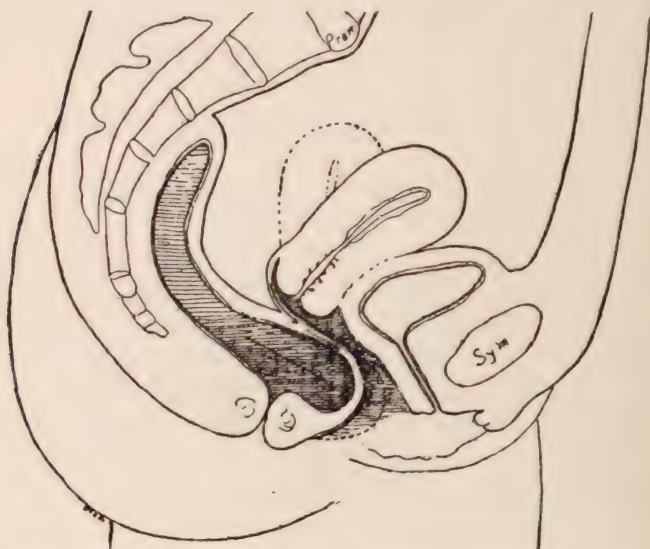


FIG. 5. Rectocele Resulting from a Weakened Pelvic Floor.

Distension of the rectum and straining incident to constipation have stretched the rectal and vaginal walls causing a permanent bulging forward of the rectum. The stretching of the posterior vaginal wall pulls the posterior lip of the cervix and drags the uterus downwards and forwards; thus descensus and retroversion will occur unless the other uterine supports are sufficiently strong to prevent it. The size of the rectocele depends upon the injury, its duration and especially on constipation.

Prophylaxis consists in better obstetrics; and especially in the avoidance of constipation and the straining, incident to it, on the freshly injured or repaired pelvic floor.

and similar to the rectocele, it may be considered as a form of hernia of the weakened pelvic floor. (See Fig. 6.) It is necessary for its formation that there should be not only the injury to that portion of the pelvic floor separating the bladder and the vagina, but also a relaxation of the entire vaginal outlet, thus permitting the distension of the bladder backwards. Its size varies with the extent of the localized injury, the amount of

general relaxation of the pelvic floor and the length of time it has been neglected. While both rectocele and cystocele may be present in the same individual, and often are, usually one or the other predominates.

UTERINE DISPLACEMENT WITH A WEAKENED PELVIC FLOOR (Independent of or caused by it).

A patient might have had a retroposed uterus before she became pregnant, and the condition might return after labor, or the retroposition might result from a sagging back of the uterus

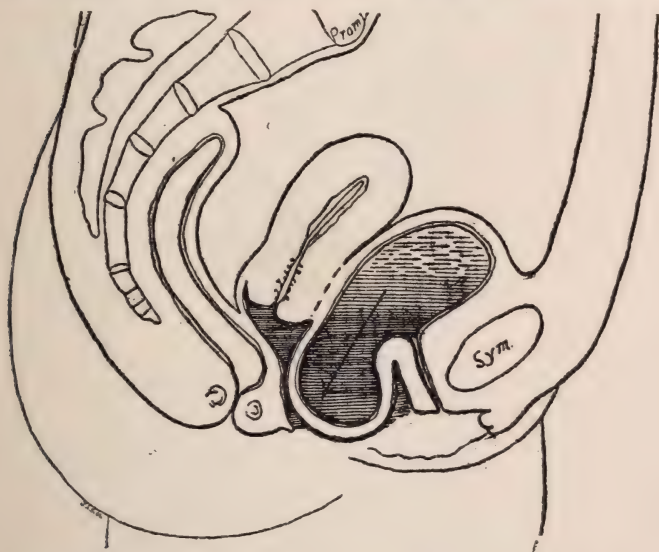


FIG. 6. Cystocele, Resulting from a Weakened Pelvic Floor.

This condition may occur with or without a rectocele. If constipation is marked a rectocele usually is present. On the other hand, if the anterior vaginal wall is injured the straining incident to defecation or any other exertion will tend to force the bladder back through the injured vaginal wall and thus form a cystocele.

Prophylaxis consists in better obstetrics.

due to a failure of the uterine ligaments to become involuted. In other cases the weakened pelvic floor removes one of the uterine supports, and likewise the relaxation of the vaginal walls pulls on the cervix thus dragging the uterus downwards, and if a rectocele is present this pulls the cervix downwards and forwards, and, as a result of any or all of the above, the uterus descends and becomes retroposed unless its other supports are

able to prevent it. As shown in Fig. 7, the weakened pelvic floor favors retroposition of the uterus, and the retroposed uterus with its long axis, identical with that of the vagina, enters that canal as a wedge and unless its other supports are able to hold it back it will descend through the canal, thus increasing the weakness of the pelvic floor. The retroposed uterus thus often

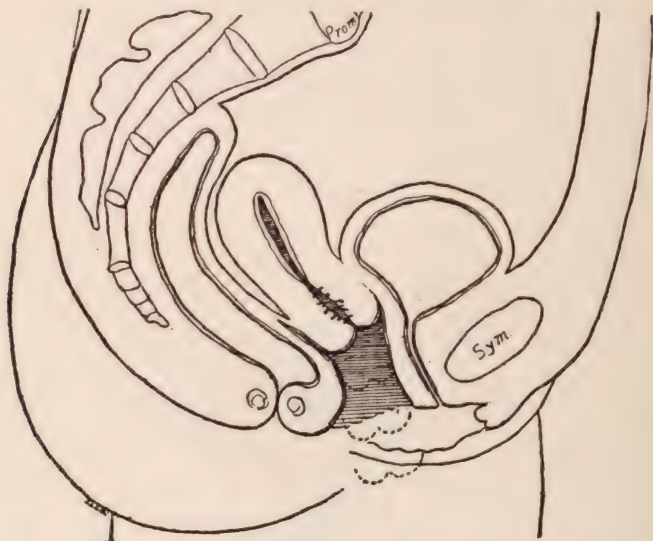


FIG. 7. Retroversion of the Uterus and Beginning Descensus, with a Weakened Pelvic Floor.

If the uterus becomes retroverted from any cause, as an insufficient ligamentous support (either developmental or due to the failure of their involution after child-birth), and a weakened pelvic floor especially with rectocele formation causing a descensus and backward displacement of the uterus is present, the uterus will eventually descend through the vaginal canal unless its ligaments are able to hold it back.

Its prophylaxis consists in better obstetrics; and especially in the examination of patients in the latter part of the puerperium and the correction of the uterine displacement if it is present.

represents the first stage in descensus or even complete prolapse of that organ. (See Fig. 8.)

In another group of cases the structures supporting the cervix are insufficient, while those supporting the body of the uterus are relatively much stronger, and as a result the cervix becomes markedly elongated thus simulating complete prolapse of the uterus, when in reality the uterus may still be in the pelvic cavity. (See Fig. 9.)

In another group of cases the uterus become retroverted, but the structures supporting the cervix are sufficiently strong to prevent its descensus. Under these circumstances intra-abdominal pressure forces the fundus backwards and thus retroflexion of the uterus occurs. (See Fig. 10.)

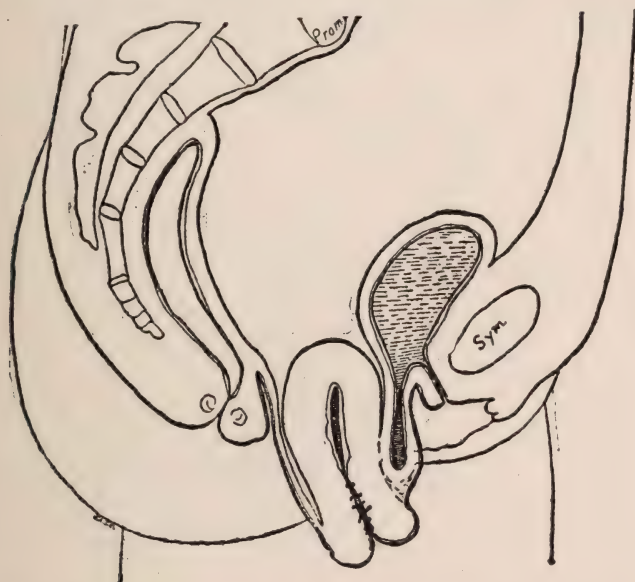


FIG. 8. Prolapse of the Uterus—Weakened Pelvic Floor.

This represents a latter stage of the condition shown in the preceding illustration, and arises from a weakened pelvic floor with retroversion of the uterus; the displaced uterus lies in the long axis of the vagina and as a wedge is easily forced down that canal unless its pelvic supports are able to hold it back.

Its prophylaxis consists in better obstetrics or the repair of the earlier stages of this condition. It is much easier to repair the condition represented in the preceding illustration and the results are better.

The amount of relaxation of the pelvic floor occurring in these cases may be well shown by comparing plaster casts of the normal vagina with similar casts of the vagina of these cases. These casts were made by pouring plaster, by means of a funnel and rectal tube, into the vagina while the patient was in the knee-chest posture, and after the plaster had become hard the patient assumed the dorsal position and the cast was removed. The cast of the normal vagina was made from a married woman, thirty years of age, who had never had children. The second cast is

that of the greatly enlarged vagina of a woman forty-six years of age who had given birth to four children, and as a result of the neglected injuries of childbirth, dating from her first child, twenty years before, there had developed a markedly relaxed pelvic floor, with resulting rectocele, cystocele and uterine descensus. A comparative study of these two casts shows us that the larger cast is twice as long and its greatest diameter is one

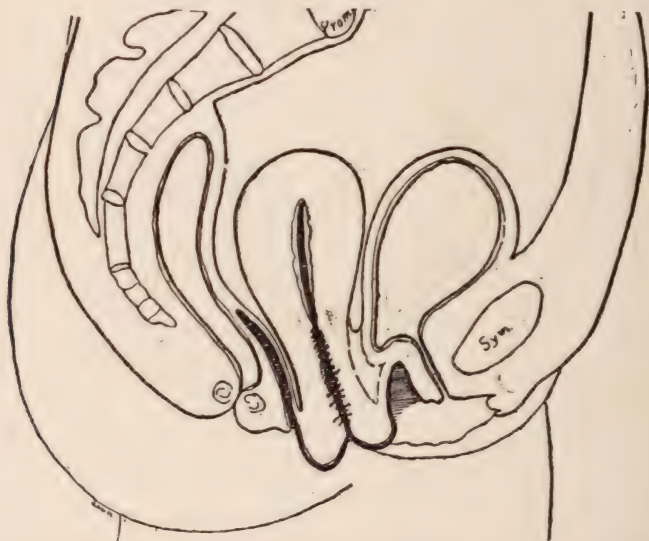


FIG. 9. Elongation of the Cervix With Descensus of the Uterus—Weakened Pelvic Floor.

The vaginal portion of the cervix has descended through the vaginal canal but the body of the uterus has been retained, by its supports, in the pelvis and as a result the cervix has become elongated.

The prophylaxis is similar to that of the preceding condition.

and a half times as great as that of the cast of the normal vagina, while the capacity of the two vaginae, as estimated from the casts, shows the larger to be 330 centimeters, *i. e.*, nearly four times the size of the smaller. When there is as large a hole as this in the pelvic floor, it is little wonder that the woman feels as though her "insides" were falling out, for some of them literally are. It must also be evident that, in the repair of such conditions, something more is needed than a perineorrhaphy to restore the pelvic floor to its normal condition and maintain the pelvic organs in their normal position.

COMPLETE TEAR THROUGH THE RECTO-VAGINAL SEPTUM.

If the sphincter ani is torn in labor and not repaired, the patient nearly always has partial or complete fecal incontinence. As a result, the feces do not accumulate in the rectum and thus distend it, it is not necessary to overcome the sphincter while at stool and all straining incident to this is absent. The pelvic floor thus has

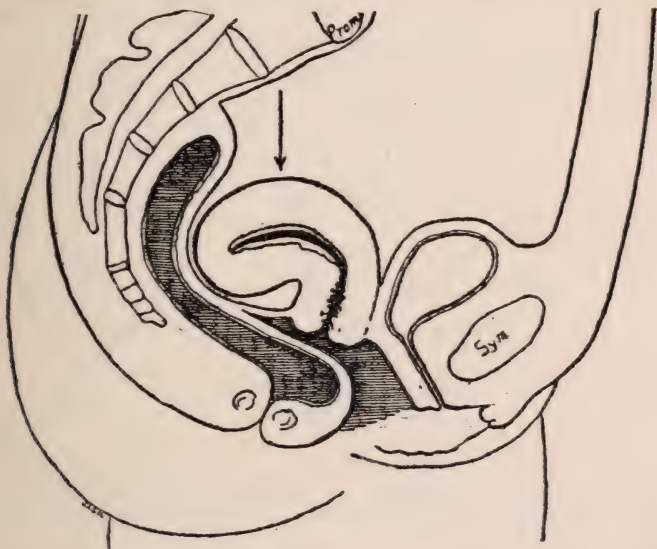


FIG. 10. Retroflexion of the Uterus—Weakened Pelvic Floor.

The uterus became retroverted, due either to insufficient ligamentous support (developmental or from a failure of the ligaments to involute) and the weakened pelvic floor especially with rectocele formation which would pull the cervix downward and forward aggravates this condition. Had the structures about the cervix been weak, descensus and prolapse would have occurred. These structures were strong enough to hold the cervix up, while intra-abdominal pressure forced the retroverted fundus downwards and thus bent the uterus, causing retroflexion.

Prophylaxis consists in better obstetrics including the replacement of displaced uteri during the puerperium.

a better opportunity to recover from the injuries to all structures other than those of the sphincter ani muscle. As a result, in these cases, there is less relaxation of the pelvic floor, a rectocele does not form and cystocele and uterine displacement are less frequently found than in those cases in which the pelvic floor is injured but the sphincter is intact. Frequently the only subjective symptom is that of partial or complete fecal incontinence.

In presenting the conditions resulting from injuries to the pelvic floor I have endeavored to show only the more common ones and point out their etiology and the various stages in their progress in order that we may the more clearly understand their prophylaxis and realize its importance.

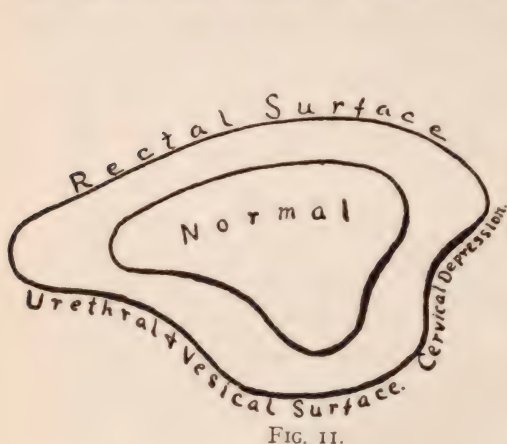


FIG. 11.

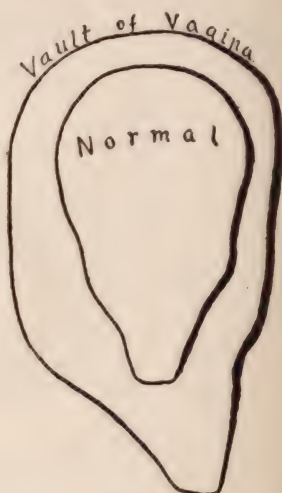


FIG. 12.

FIG. 11. Superimposed Outlines of the Plaster Casts of the Vaginae of Two Women (made with the patients in the knee-chest posture), Seen from the Side. $X\frac{1}{2}$.

The smaller outline is from a cast of a normal vagina of a woman thirty years old who had never had children and the larger outside outline is from a cast of a markedly relaxed vaginal outlet with rectocele, cystocele and descensus of the uterus in a woman forty-six years old whose pelvic floor had been injured, and not repaired, twenty years before this cast was taken.

FIG. 12. Superimposed Outlines of the Under Surface of the Casts shown in FIG. 11.

In comparing the casts from these two cases one readily sees that a marked change has taken place in the pelvic floor of the woman who has borne children. The vagina is longer, its walls have been greatly stretched and its cavity greatly increased. It can be said that there is a large hole in the pelvic floor into which the uterus, rectum and bladder are forced.

A study of these outlines will readily convince one as to the importance of prophylaxis and also how inefficient the usual perineorrhaphy must be in the treatment of these conditions.

PROPHYLAXIS OF INJURIES TO THE PELVIC FLOOR AND THEIR MORE REMOTE RESULTS.

It is the duty of the physician to prevent, as far as possible, the injuries caused by childbirth, to repair them when they occur,

and to guard against any factors causing undue strain on the injured or weakened floor, and also to see that the evil results of these injuries are corrected before the patient has suffered too long and when their cure can be easily accomplished. The injuries of childbirth may be greatly lessened by the more careful conduct of normal labors, in the prevention of undue stretching or

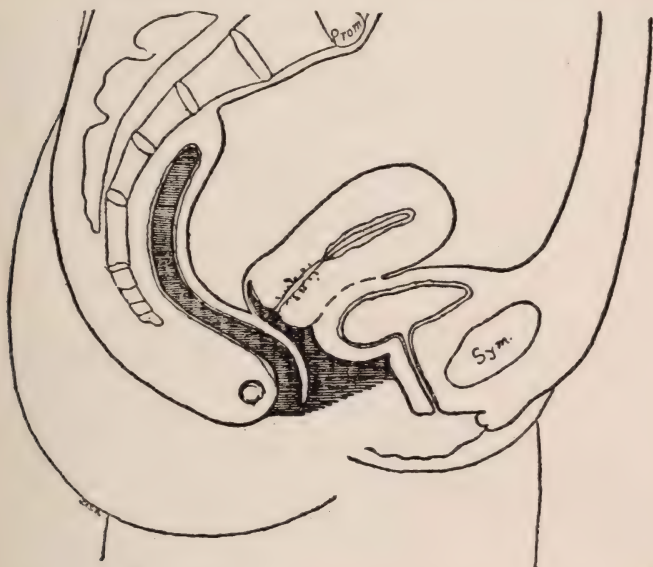


FIG. 13. Complete Tear Through the Recto-vaginal Septum.

During child-birth the recto-vaginal septum has been torn including the sphincter ani.

Certain features may be noticed in these cases which emphasize the part played in straining at stool as a cause of the conditions following the injuries to the pelvic floor where the sphincter ani is intact. In those cases where the sphincter is torn across and therefore there is no straining at stool, rectocele, cystocele and uterine displacement are all usually absent; frequently the only symptoms is the loss of control of fecal movements.

The prophylaxis consists in better obstetrics.

tearing, and, of the greatest importance, the immediate repair of these injuries should any occur. In spite of all precautions the pelvic floor is frequently injured and here the opportunity presents itself to prevent the ill results of this injury by immediately repairing it. This procedure, if well done, may save years of suffering afterwards. Here we must bear in mind the four

essentials for successful plastic work in this situation: (1) Cleanliness, (2) accurate approximation without tension, (3) tying the sutures, loosely, so as not to strangulate the tissues, (4) the prevention of any strain on the freshly repaired tissues, until the wound has become healed. Thus, in the after treatment of these cases, our work may or may not be successful according as we protect these freshly injured or repaired tissues from the strains incident to constipation, getting up too soon or any other undue exertion. Of the factors causing this strain, constipation is most important. We have seen how the pelvic floor in which the sphincter has been torn frequently completely recovers from all injuries except those inflicted on that muscle, while the injured pelvic floor with intact sphincter usually results in secondary changes, as rectocele, cystocele and the various uterine displacements which are frequently in a large measure due to the effects of straining on the weakened pelvic structures, in the attempts to overcome the sphincter in defecation.

It is also important to examine women at the end of the puerperium in order to make sure that the uterus is in its proper position. If found in retroposition, and if the organ is replaced and supported by a suitable pessary, this may not only cure the retroposition but it also prevents the injurious effects of the retroposed uterus on the weakened pelvic floor.

The opportunity for prophylaxis also presents itself in the repair of the conditions caused by these injuries before their remote effects have taken place. It is much easier to repair a moderately relaxed outlet than a complete prolapse of the uterus or marked rectocele and cystocele. The result will be better and the patient will have been saved the discomforts arising from these conditions.

In a patient who will probably have more children it is not always advisable to repair those injuries unless they are causing her much discomfort. If they are causing great discomfort, and especially if there is little likelihood of succeeding childbirth, a repair of the part is indicated.

If all physicians would pay more careful attention to their normal labors, in the prevention of injuries, and also by recognizing them if present and immediately repairing them, and especially by guarding against the strains on these injured parts from constipation, getting up too soon, etc.; and if they would use the utmost skill in operative interference or better, employ

in these cases the most skilful obstetrician available, not only would future mothers be insured against many of the immediate and remote results of these injuries and so be able to live more useful lives, but the surgeon's work in this field would be greatly lessened.

REPORT OF THREE MONTHS' SURGICAL SERVICE AT THE ALBANY HOSPITAL.

Read before the Medical Society of the County of Albany, January 9, 1907.

By EDGAR A. VANDER VEER, M. D.,

Attending Surgeon, Albany Hospital.

To illustrate the variety of cases which present themselves at a general hospital, such as the Albany Hospital, I wish to report to-night a synopsis of the cases treated by me there during my term of service, April, May and June, 1906.

The total number was 131; the total number of operations, 101; the number discharged from the hospital as recovered, 107; improved, eight; unimproved, three; died, eight; remaining in hospital, seven.

The cases were as follows:

Appendicitis, twenty-five; Amputations, nine; Diseases of Bladder, three; Carcinoma of Different Parts of Body, seven; Double Inguinal Glands, one; Empyema, two; Fractures of Limbs, twelve; Fractures of Skull, three; Varicocele, four; Herniae, twelve; Infections, three; Diseases of Kidney, four; Lipoma of Neck, one; Diseases of Liver and Gall-bladder, three; Nerves and Blood Vessels, four; Plastic Operations on Lip, one; Rectal Cases, eight; Diseases of the Stomach and Intestines, four; Cervical Glands, two; Salivary Glands, one; Uterus and Appendages, twenty-two.

The cases of appendicitis, twenty-five in number, present no unusual features, except for a peculiar coincidence, in that one morning I performed a secondary operation upon a young lady, to close an appendicular fistula which had followed a gangrenous appendix. The same night her brother was taken ill with an acute attack of appendicitis, and growing worse was taken to the

hospital the next afternoon. I operated upon him at once and removed a beginning gangrenous appendix. Thus, one family had two children in the hospital at the same time recovering from the effects of operations for appendicitis. Both of them made excellent recoveries.

A peculiar case was that of Mrs. E. B., aged forty, a housewife by occupation, who entered the hospital on June 5th. At that time she was complaining of severe pain in the lower right quadrant of her abdomen.

Her family history was negative.

Past history was, She had had the usual diseases of childhood, measles five years ago. Has had grip. Otherwise has been healthy to present time. Menstruated at thirteen; always regular. She states, however, that during the last six years she has had several attacks of severe pain in her right side, which had been diagnosed as appendicitis, and that during one of these attacks all preparations were made for an operation, when she grew better, and the operation was postponed.

The history of the present attack was that on last Wednesday, May 30th, 1906, she was taken sick immediately after breakfast, with a severe pain in the right side just above the hip; vomited severely until about ten o'clock the same night. Pain in side continued until Saturday, June 2nd, when it suddenly stopped, and located itself about the appendix. This pain was very sharp and kept up all day Sunday, June 3rd, and Monday, June 4th. On June 5th she was brought to the hospital, and at that time had severe aching pain in the same region. She stated that she had used Hunyadi water freely from the beginning of the attack until she entered the hospital, thus keeping her bowels open and getting rid of the gas in the stomach, which had caused considerable annoyance.

When I saw her at the hospital the whole lower part of the abdomen gave a hard and board-like sensation, and it was impossible to make out anything either by palpation or percussion. Bimanual examination was negative. Temperature upon admission was 99.6 degrees; pulse, 94. During the night her pulse at one time went up as high as 108, but her temperature remained about the same.

Owing to her history of having had previous attacks of appendicitis, also due to the fact that the whole lower part of the abdomen was so rigid, a diagnosis of acute appendicitis was made and the patient ordered for operation early in the morning.

The usual incision in the right iliac region was made, when, upon opening the abdomen, a large mass the size of a grape fruit was found occupying the whole right side of the pelvis. It was impossible to explore the growth satisfactorily through the appendicular incision, so a median incision was made and the pelvis completely exposed. Careful examination then revealed an ovarian cyst of the right ovary, the size of a child's head. The pedicle of the cyst had become twisted upon itself, causing strangulation and necrosis of the cyst. Just how long this condition had existed it was not possible to say, but evidently not more than two or three days, as the adhesions between the cyst and the intestines were of very recent origin and were very easily broken up. The cyst was evacu-

ated of its contents, the pedicle untwisted, and removed in the usual manner. Search for the appendix was then made and it was found in its position, bound down by adhesions, and evidently in a state of chronic inflammation. It was removed with some difficulty. The wounds were then closed with silk wormgut sutures, and drainage tube was used in the median incision. Patient made a slow but uneventful recovery.

Of the amputations, nine in number, five were of the upper extremities and three of the lower, the ninth one being a double amputation of the legs. The one death was a railroad crush of both thighs, requiring a double amputation. The patient had met with the accident six hours before and had lost a considerable amount of blood.

In all the cases where patients had met with accidents requiring amputations, endeavor was made to operate as soon as possible after the patient had entered the hospital, and not waiting until they had survived the shock of the accident, as the shock of the operation, in my opinion, adds very little to the shock of the accident; thus the patient can recover from a double shock much more easily and comfortably than when he recovers from the shock of the accident and then later is subjected to that of the operation.

The tendency of cases to run in groups is well illustrated by those of fracture of the skull, three of which entered the hospital within twelve days.

CASE NO. 1 was that of A. E., aged four years, who fell out of a second-story window and struck on the right side of the head just above the eye, in the right frontal region, fracturing the skull in a dozen different places. The patient was immediately taken to the hospital, and operated upon within an hour of the accident.

The wound was first rendered as aseptic as possible; the skull was then trephined in the region of the fracture and four pieces of bone were removed. The depressed portions of bone were brought up into place and as free drainage as possible established. The fracture extended down into the orbit, and quite an extravasation of blood had taken place into the socket of the eye. At this time the brain was oozing out, and continued to do so for two or three days after the accident. The patient was entirely conscious after the injury, before the operation, and speedily regained consciousness after the operation. The temperature and pulse of the patient, which were at first high, gradually became normal, reaching that point about the third day, and everything seemed favorable for a recovery. The wound was dressed at the end of forty-eight hours, and there was hardly any evidence of suppuration. This state of affairs continued for about ten days, and the only unfavorable symptom was, that a hernia of the right frontal lobe slowly developed through the site of

fracture. At the end of the second week the hernia was removed by means of the elastic ligature and thermo-cautery, and for a time the patient seemed to again improve, but gradually pulse and temperature increased, and the patient died at the end of five weeks from a general meningitis. Severe convulsions ensued for two or three days previous to her death.

CASE No. 2. Mrs. M. H., aged twenty-five, housewife by occupation, entered the hospital on the night of June 9th, with the following history:

While attempting to cross the road was struck by a Schenectady car and dragged for several hundred feet.

Patient was immediately brought to the hospital, and when examined there was found to be in a condition of profound shock—pulse almost absent, imperceptible at the wrist—and profoundly unconscious. Careful examination revealed a comminuted fracture of the left temporal region, including the supraorbital ridge, and extending down to the tragus of the ear. There were also several other slight contusions on the body, but no other serious injury could be found. Operation was immediately decided upon, and she was placed on the operating table. Owing to her profound unconsciousness and low condition, no anesthetic was administered.

An incision was made from one inch of the outer side of supraorbital ridge on the left side down to the tragus of the ear. Several fragments of fractured bone were removed. The dura mater, however, was only exposed in one spot, most of the fracture being over the supraorbital ridge. Iodoform gauze was placed down to the bottom of the wound as drainage and incision was closed with silk wormgut sutures, the wound in the tragus of the ear being approximated as closely as possible. The usual dressings were applied.

At one time in the operation it seemed as if the patient would die on the table, from shock. She rallied, however, and was taken to the recovery room; and, after reaction was established, her temperature was 102.2 degrees; pulse, 160; respirations, 44. At the end of the first twenty-four hours, pulse was 168; temperature 102.6 degrees; respirations, 42; patient still unconscious. At the end of the third day she regained consciousness, pulse, temperature and respirations gradually becoming normal. The wound was dressed at the end of forty-eight hours, and, as there were no signs of suppuration, the iodoform gauze was removed. The patient had occasional periods of delirium, but these gradually grew less and less and finally ceased on the tenth day, at which time she was enabled to sit out of bed. She left the hospital at the end of fifteen days, thoroughly conscious, and with the wound perfectly healed. I have seen the case several times since, and aside from the fact that she has occasional severe headaches, she has entirely recovered.

CASE No. 3. A. A., aged five years, entered the hospital with a history of having been kicked in the forehead by a horse. He was rendered unconscious, and a depressed fracture of the skull ensued. His home physician rendered the wound as aseptic as possible and removed as many small pieces of bone as he could, and the boy gradually improved. There

was left, however, a discharging sinus in the middle of the frontal bone, which failed to heal.

Upon entering the hospital the wound was cleansed and an extensive incision was made in the middle of the forehead, and the area of the fracture entirely exposed. A depressed fracture of the frontal bone in the median line was found. All pieces of depressed bone were removed and the wound cleaned as well as possible. He did well and left the hospital at the end of three weeks in fairly good condition. There was, however, some discharge yet from the wound.

A letter from the physician about a month after his leaving the hospital stated that the patient had developed meningitis, and died very suddenly.

In all three cases the endeavor was made to make the wounds as thoroughly aseptic as possible and to establish free drainage, the great danger, of course, in such cases being from an infected wound, causing either abscess of the brain or meningitis.

In the first case this seemed to have been accomplished, but owing to the extensive injury, a deep-seated abscess formed, which eventually proved fatal. In the second case the drainage was sufficient to cause a practically aseptic wound; also very little of the brain was exposed, and no fatal result followed. In the third case inability to preserve free drainage led to a fatal termination.

Among the hernia cases the most interesting was that of W. M., who entered the hospital with the following history:

Family and past history, negative.

Present trouble began three days previous to entrance to hospital. While lifting a log he noticed a tumor in the left inguinal region. He had severe pain, and vomited during the following night. The next day he saw a physician, who gave him a cathartic, with no result. The day following that he came to the hospital, at that time presenting a mass in the left inguinal region, protruding into the scrotum, which was very painful.

The patient entered the hospital at midnight, and was not seen by me until the following morning, when a diagnosis of strangulated inguinal hernia was made, and an immediate operation advised and accepted. The operation was as follows:

An incision five inches long, and one inch above Poupart's ligament, was made, and the sac was dissected out and incised. About an ounce of serous fluid was evacuated. The intestines presenting were black and lusterless, and as the color did not return after repeated applications of hot tampons, a resection of the intestine was found to be the only thing to do. Enterostomy clamps were placed on each side of the gangrenous portion of the intestine, and a V-shaped piece of mesentery was removed. The ends of the healthy portion of the intestine were brought together with No. 1 silk sutures through and through all the coats of the intestine,

and over this No. 1 silk Lembert suture was used. The exposed healthy intestines were thoroughly irrigated with a normal saline solution, and returned to the abdomen. About six inches of the small intestines were removed. The rest of the operation was carried out as a modified Bassini operation for inguinal hernia. The patient left the table in good condition; his pulse and temperature were practically normal from the beginning. His bowels moved at the end of forty-eight hours, and he had an excellent movement every day after that, without a cathartic. Wound healed by primary union. He was enabled to sit out of bed at the end of two weeks, returning home at the end of three weeks, in perfect health.

The interesting point about this case was that about six weeks later he was taken with an attack of appendicitis, and going to the hospital, operation was decided upon, and performed by my brother, Dr. James N. Vander Veer, who found a gangrenous appendix which was just on the point of rupturing. The man also made a good recovery from this operation.

Another interesting case, more from a pathological point of view, possibly, than from a surgical standpoint, was that of Mrs. R. V., aged thirty-two, married, and a housewife by occupation. She gave a history of having nursed a baby up to within a few weeks' time of entering the hospital, when she noticed the right breast was very hard and swollen, and contained numerous small tumors. Upon examination the glands in the axilla did not seem much involved, but the breast was full of small nodules, believed to be multiple abscesses.

About fifty enlarged masses were removed from the breast, which upon pathological examination proved to be tubercular in character. The patient did not give any history of tuberculosis, nor was any trace of it to be found in other parts of the body, outside of the growths in the breast. She made a good recovery, and so far has not had a return of the trouble.

The four kidney cases also present an interesting study, showing the different variety of diseases of that organ.

CASE NO. 1. J. N., aged forty-two, miner, born in Russia, complains of pain in left side of abdomen, also a tumor in the left iliac and lumbar regions, first small, gradually growing larger.

When he entered the hospital his abdomen presented an enlargement a little to the left of the median line. This was dull on percussion, and fluctuated. The left flank was bulging and dull. The tumor extended from the symphysis pubis to the ensiform cartilage. On inflating the rectum the colon was found to be pushed forward toward the median line, and to be in front of the tumor mass. The urine was normal, but rather scanty in amount.

The history of the case, together with the symptoms, led to a diagnosis of hydronephrosis of the kidney, and an operation was advised, and accepted by the patient after a great deal of reluctance, since he was a foreigner, and unable to understand much English.

Upon operation an incision six inches long was made in the left semi-lunaris. Upon entering the abdominal cavity a large cystic mass was

found retroperitoneal, extending from the left flank, and very probably connected with the kidney. The peritoneum over the kidney was incised and the mass evacuated of about three gallons of fluid, urinous in character. The shell of the kidney, which this cyst proved to be, was enucleated from its connective tissue capsule, and finally removed. The pedicle was ligated with No. 2 silk, and renal artery was ligated quite close up to the aorta. A large drainage tube was inserted to the bottom of the wound and the wound closed with silkwormgut sutures.

The drainage tube was removed at the end of forty-eight hours, since there was scarcely any drainage. The patient made a slow and uneventful recovery, being delirious for some time, but his mental condition gradually cleared up, and he was enabled to leave the hospital at the end of five weeks, entirely cured.

Just what was the cause of the hydronephrosis it is a little difficult to say, as there was no calculus to be found either in the kidney mass itself or along the course of the ureter, blocking it up; neither was there any twist of the ureter found, nor growth of any sort, nor was any such history obtained.

CASE NO. 2. D. R., aged forty-three, traveling man by occupation, entered the hospital complaining of bladder trouble. Father dead, cause unknown; mother died of heart disease; two brothers and two sisters alive and well.

About sixteen years ago patient had an attack of gonorrhea, which lasted about six months. Twelve years ago, and again six years ago, was sick, and physician told him he had stone in his kidney.

Few days ago patient was taken with present illness, but for about three months past has been feeling sick. Noted that urine was cloudy, and contained blood at times. Not a great deal of pain upon urination, but burning sensation on completion of micturition. Three days ago was taken ill with a chill, and was much depressed. Patient went to bed and sent for a physician. Appetite good and bowels regular.

After segregation of the urine, the diagnosis of renal calculus of the left kidney was made, and operation advised. At the time of examination the right kidney seemed to be doing its work nicely, but hardly any urine was excreted by the left kidney.

An x-ray picture taken at this time showed calculi in the pelvis of the left kidney, but none in the right, the right side being entirely clear. This, more than anything else, confirmed my diagnosis of renal calculi of the left kidney.

Operation: Lumbar incision six inches long, parallel to, and two inches below, twelfth rib, through musculature. Fatty capsule drawn up and excised. Kidney was found enlarged and firmly held down with adhesions. These adhesions separated, and kidney brought into wound with difficulty. Broad ligament clamp was placed on renal vessels, and kidney excised from pole to pole, and several large calculi removed from its pelvis. Kidney packed with gauze, and closed at each pole with deep mattress sutures.

Drainage: One piece of bismuth gauze down to pelvis of the kidney. Closure with silkwormgut sutures.

Owing to the fleshy condition of the patient, the kidney was exposed with some difficulty, and during the removal of the calculi there was considerable blood lost. Patient, however, rallied well from the operation, and seemed to be doing well for about twelve hours, when he went into a condition of shock, and died.

There was no urine secreted after the operation, the kidneys utterly refusing to act.

The following is a summary of the autopsy, held the next day:

"Aged forty-three. Body is that of a well-developed, well-nourished adult male. Subcutaneous fat is present in large amount. In the left flank is an operation incision closed by sutures.

Abdominal cavity—In the left flank above operation wound are a few hemorrhagic ecchymoses. Omental mesenteric fat greatly increased in amount.

Pleural cavities—Normal.

Pericardium—Normal.

Heart—Valves and cavities normal. Myocardium is grayish red in color, fatty and very friable.

Lungs—Normal.

Spleen—Capsule smooth and on section of normal consistence. Malpighian bodies fairly visible.

Stomach, intestines, pancreas—Normal.

Liver—Large, grayish yellow in color. Capsule smooth and on section has a grayish red color with greasy surface. Markings obscured.

Gall-bladder and ducts—Normal.

Right kidney—Pale yellowish in color with irregular nodular projections which on section contain pus. Throughout the kidney substance are felt a large number of concretions. On section these concretions fill most of the pelvis and extend irregularly into the kidney substance. They are surrounded by a considerable accumulation of thick yellowish pus. Ureter slightly dilated. (Kidney placed in formalin; more detailed description will be made later.)

Left kidney—Is larger than right and markings generally obscured by extravasation of blood attending operation. Ureter slightly dilated.

Bladder—Contains a small amount of thick purulent material but its mucosa while showing very well marked injection showed no lesions.

Prostate—Normal.

NOTE.—Examination was hurried; main examination made upon kidneys and heart.

Anatomical diagnosis—Nephrolithiasis of right kidney with acute pyelo-nephritis and multiple abscesses of kidneys. Operation wound of left kidney. Marked dilation of ureter. Congestion of mucosa of bladder with a small amount of pus within bladder. Fatty degeneration of myocardium and liver. Operation wound of left flank.

Frozen sections of heart and liver (stained with Sharlack R.) shows extreme fatty transformation. In the heart the muscle fibres are filled everywhere with small fat droplets.

Microscopic description—(Mr. Silliman).

Kidney—Capsule thickened irregularly. Hemorrhages are seen in small areas. The glomeruli in some cases are normal, but the majority show an accumulation of serum or blood both in Bowman's capsule. Some tufts are so atrophied as to be almost indistinguishable. Tubules-epithelium shows postmortem degeneration. Some of the tubules are filled with detritus, pus cells and bacteria.

Heart—Focal increase of interstitial tissue with atrophy and degeneration of muscle.

Liver—Considerable postmortem decomposition. Several of the cells show an infiltration of fat. The nucleus is displaced and the characteristic signet ring shape is shown. These fat droplets are irregularly distributed.

Microscopic diagnosis—Pyelo-nephritis. Chronic interstitial myocarditis. Fatty infiltration of liver and heart."

In this case all the symptoms pointed to the lesion in the left kidney, but apparently none in the right. He had all the pain on the left side, with comparatively little on the right. The left kidney could be mapped out, while the right kidney could not; and, most important of all, the segregation test showed the right kidney to be secreting fairly healthy urine, while the left kidney secreted practically none. All these facts taken together led me to the decision to operate on the left kidney, and I am inclined to think that if the right kidney had been able to do its normal amount of work, the patient could have been saved. As it was, however, the autopsy showed that the right kidney was even in worse condition than the left, and that so far as the operation on the left kidney was concerned, there had been very little, if any, hemorrhage after the operation was completed.

CASE NO. 3 was that of Mrs. L. B., who entered the hospital with the following history:

Complains of blood in urine, and dizziness. Family history, negative. Past history: Had all the diseases of childhood, typhoid fever years ago; always menstruated regularly.

Present illness: Last September noticed a great deal of blood in urine. Had dizziness at times but never fell. It all stopped and then last Saturday started up again. Says blood would clot in bladder and come out in urine this way. Never had a bit of pain except a dull feeling in back. Bowels regular.

Upon careful physical examination the right kidney seemed somewhat enlarged, and whatever tenderness she had was more on the right side, in the region of the kidney, than on the left. Upon cystoscopic examination of the bladder, hemorrhage was seen to come entirely from the right kidney. The bladder walls themselves looked normal and healthy. Examination of the urine, negative, except for the blood which it contained. A nephrotomy was advised, and accepted.

Taking into consideration the history of the patient together with her symptoms and age, I made a diagnosis of carcinoma of the kidney, and expected to find considerable trouble with it.

The operation was as follows:

Incision four inches long, parallel with lower border of twelfth rib, and one inch below, through fascia. Perirenal fat grasped with hemorrhoid forceps, and incised. Kidney brought up with difficulty, and its blood supply controlled with Kocher clamp, the blades of which were protected with rubber tubes. Exploration of the kidney was made by means of the aspirating needle, but nothing pathological found. The kidney was then split from pole to pole, down to its pelvis, and absolutely nothing abnormal was found. Palpation of the ureter also showed it to be normal in character. The case, then, evidently was one of essential hematuria, the cause of which, so far as I can learn, is not as yet known. After thorough exploration of the kidney and adjoining tissues, and nothing abnormal found, the pelvis of the kidney was packed with vioform gauze, and each pole approximated with a No. 3 chromocized catgut mattress suture, the kidney returned to its bed, and the wound closed with silkwormgut sutures.

Patient rallied nicely from the shock of the operation, but for the first three or four days passed considerable blood from the bladder. The packing was removed at the end of forty-eight hours, and the kidney carefully repacked, this packing being removed at the end of another forty-eight hours. The blood in the urine gradually cleared up, and at the end of a week she was passing urine free from blood, and without much pain. There was, however, quite a discharge from the wound. This sinus persisted while she was in the hospital and continued for three months after she returned home. A letter recently received from her physician states that the urine is free from blood, that the sinus in her side has closed and that the woman feels perfectly well.

Just the condition which was present here I am unable to state. The fact however remains, that splitting the kidney from pole to pole, down to pelvis, packing it and then simply drawing it together again with a mattress suture through each pole, seemed to relieve the condition entirely.

Case No. 4 was unimportant.

The treatment of all kidney cases was to get as good an exposure of the kidney as possible, and then to open into the kidney as much as was necessary, having an assistant control the hemorrhage either by the fingers, or by forceps padded with rubber drainage tubes, placed on the great vessels. There seems to be comparatively little danger in so opening into the kidney substance when the hemorrhage is properly controlled. When the clamp is removed the hemorrhage is easily controlled by packing, and the amount of blood lost is comparatively insignificant.

The oldest patient was T. N., who suffered from a lipoma on the right side of the neck. His history was as follows:

Aged seventy-six, born in Canada; complains of tumor above the right clavicle.

Family and past history, negative.

Present illness: About eight years ago noticed a small tumor above the right clavicle. About four weeks ago it started to grow, and has continued to increase in size ever since. Never had pain. Appetite good. Bowels constipated. Vision and hearing fair. No loss of weight or strength.

The operation was as follows:

Performed under cocaine and adrenalin. An incision about six centimeters long was made over the site of the growth, and the tumor, which proved to be a lipoma the size of a grape fruit, was removed. Wound was closed with catgut.

Patient stood the shock of the operation very well and was able to sit out of bed at the end of forty-eight hours. He went home at the end of a week, the wound healing by primary union.

As you will observe, the patient was seventy-six years old, but of good constitution, and with comparatively no atheroma of the arteries.

Another interesting case was that of Mrs. M. L., who entered the hospital suffering from trifacial neuralgia, and whose history was as follows:

Aged fifty-five, widow, United States, dressmaker; complains of pain in left side of face.

Family history, negative.

Past history: Had all the diseases of childhood.

Present illness: Pain in the left side of face; began at thirty-eight, and has had it ever since. It will let up for a few days at a time only. Bowels constipated; appetite fair; has not lost weight or strength.

Diagnosis, trifacial neuralgia.

After careful study of the case it was decided to remove the Gasserian Ganglion on the left side—the side on which the pain was. The operation was performed on April 17th.

As a preliminary to the operation the common carotid on the left side was ligated. After that Abbey's modification of Hartley-Krause operation for exsection of Gasserian Ganglion was performed.

Incision three inches long, perpendicular to zygomatic process. Excision of the process division of the temporal fascia. Incision of periosteum, and trephine of bone at this point. Separation of dura mater to foramen ovale. Fifth nerve located at this point, and the second division of the fifth nerve traced to its source, and ganglion removed.

Patient withstood the operation well and rallied from the shock. However, she never completely regained consciousness, but lay in a semi-conscious state for seventeen days. At the end of the thirteenth day, her temperature and pulse, which had been fairly high, returned very nearly to normal, and conditions seemed favorable for her recovery, but a septic pneumonia developed, and she died on the seventeenth day from that cause.

I believe that the ligation of the common carotid accounted for her not fully regaining consciousness; on the other hand it was of great value in limiting the supply of blood to the field, and thus doing away with the possibility of hemorrhage obscuring the field of operation.

The most interesting case of the group was one of mesenteric cyst, which I hope to report more fully later on. However, a slight resumé at the present time may not be out of place.

The patient was S. A., aged thirty, born in Italy, single, laborer. He was transferred to my service by Dr. Neuman, of the Gastro-enteric Division of the Hospital, with the diagnosis of probable movable spleen, at this time complaining of pain in the head, and epigastrium on the left side. His present illness was given as follows:

After a severe attack of malaria four years ago, patient noticed a tumor on the left side just below the ribs. The tumor was movable on inspiration. Patient complains of pain in the epigastrium, in the left lumbar region, also in the head. After eating, the patient has great distress, usually lasting about one hour. Patient is better at times. Appetite poor and food not relished. Description of operation is as follows:

Incision six inches long in left rectus muscle. A cyst the size of a large orange, situated in the left hypochondriac region, was lifted through incision. The cyst partially closed the lumen of the intestine and extended almost to its attachment posteriorly. An intestinal clamp was placed on each side of the cyst, the distance between the clamps being twenty inches. Intestine now cut between clamps to mesentery, which was ligated with No. 2 silk, and a V-shaped portion excised. An end-to-end anastomosis was performed, the mucosa approximated with No. 2 continuous; the peritoneum with No. 1 continuous. The divided edges of the mesentery were next approximated with No. 2 silk, and abdomen closed with silkwormgut.

Patient's bowels moved at the end of forty-eight hours, and he made a very good and complete recovery, afterwards getting a position in the hospital, where he continued for quite a while.

Of the cases of diseases of the uterus and appendages, the most interesting was that of Miss C. B., who gave the following history:

Aged thirty-seven, housewife, born in United States. Entered the hospital June 5, 1906. Complains of growth in right side of abdomen. Mother died of cancer of stomach. History otherwise negative. Patient has had diseases of childhood; St. Vitus dance at puberty. Menstruated at 15; regular till about five weeks ago. Has not been well since an attack of grip two months ago. Last week in May was examined by a physician, and mass discovered in lower right quadrant of abdomen. Three weeks later, at a regular monthly period, began to flow excessively, and this lasted up till about two weeks ago, when flowing ceased. Has had no

pain whatever. Has lost much flesh and strength. She has been quite thirsty, and urinated more frequently since hemorrhage; had to get up once or twice during night to urinate. Digestion good; bowels regular, not constipated. History otherwise negative.

Bimanual examination revealed a pyriform growth in the pelvis, exactly simulating pregnancy. She has not, however, any of the other signs of pregnancy, such as morning nausea, aerola about the breast and bluing of the vagina. Diagnosis was therefore made of fibroid tumor of the uterus.

At the operation a median incision six inches in length was made between the umbilicus and the pubis. At this time the growth was seen to spring from the posterior wall of the uterus. The operation was performed in the usual manner, as follows:

Clamp applied to broad ligament, after placing patient in Trendelenburg position, and uterus was removed with scissors and scalpel. The ovarian, funicular uterine arteries secured with No. 3 silk. Muscular tissue of the stump approximated with No. 3 silk, and peritoneal edges of the broad ligament and over the cervix approximated with No. 1 silk. No drainage. Wound closed with large sutures—No. 1 iodized for peritoneum, No. 3 iodized for muscle and fascia, No. 2 iodized for fat, and No. 1 chromocized for skin.

The pathological report was sarcoma of the uterus; hyperplasia of uterine mucosa; chronic salpingitis; cystic ovary of left side.

Patient left hospital at the end of four weeks, and has since passed out of my observation. However, I believe she made a good and complete recovery.

These are the more important cases which occurred during the three months mentioned above, and while there were several more interesting cases, I will not take up any more of your time in reporting them to you.

THE DIFFERENTIAL DIAGNOSIS OF CEREBELLAR ABSCESS AND PUS IN THE LABYRINTH.

Read before the Medical Society of the County of Albany, February 13, 1907.

By LOUIS LE BRUN, M. D.

Mr. President and Gentlemen of the Society:

It was my privilege and pleasure within the past year, while on service at the Politzer Ear Clinic in Vienna, to study and watch the investigation which was conducted by Dr. Heinrich Neumann and Dr. Barany into the Differential Diagnosis of Cerebellar Abscess and Pus in the Labyrinth. Dr. Neumann having proved the correctness of his views, I take the liberty of presenting them to you together with the result of his obser-

uations on this most important subject, which I hope will be of interest to you.

Cerebellar abscess and pus in the labyrinth having so many symptoms in common, it is a very difficult matter to make a differential diagnosis. This is shown by the widely different opinions of the authors. Okada does not mention the differential diagnosis, as he believes that nystagmus is not present in labyrinth disease, and that the cerebellar ataxia is distinguished from the labyrinthine ataxia by the absence of vertigo. Experience has taught us the opposite, that vertigo is always present in cerebellar ataxia, while in labyrinth ataxia it is often absent. Koch admits, on the ground of this symptom, the difficulty of making a differential diagnosis and says it is very often necessary to open up the middle ear freely. In this way we may be able to determine whether the symptoms before us, the gait and disturbed equilibrium, are from the labyrinth or due to the cerebellum.

An exhaustive discussion has been presented by Hinsberg on the differential diagnosis of cerebellar abscess and pus in the labyrinth, in which he ignores the two common symptoms and reverts to those that as a rule do not belong to pus in the labyrinth; for example, the severity of the disease picture, in cerebellar abscess the emaciation, lassitude, psychic changes, the optic neuritis, strabismus, motor irritation, slowness of pulse and pain in the nape of the neck. He believes when such phenomena are present in a marked degree they will make the differential diagnosis possible, even though these two diseases are frequently combined, but they may also be absent in cerebellar abscess. So that the symptoms that are common to pus in the labyrinth and abscess of the cerebellum may be present in both. Hinsberg mentions a case in which the differentiation was in fact impossible. Korner (*Otitic Diseases of the Brain*) says up to the present time not one case which was free from objection had been described in which the so-called cerebellar ataxia and cerebellar vertigo seemed with certainty not to emanate from the diseased labyrinth, but from the cerebellum. It also appears doubtful to Korner whether the nystagmus was to be regarded as a labyrinth symptom in these cases.

Korner again emphasizes the fact that pus in the labyrinth may simulate abscess of the encephalon and especially of the cerebellum. Pus in the semicircular canals and in the vestibule

betrays itself sometimes by the sudden appearance of vertigo, with falling toward the side of the diseased ear, nystagmus with extreme deviation of eye toward the diseased side, sometimes also toward the other side, and by vomiting. Fever in general does not appear, according to his own observation. Astonishing in this description is the statement that nystagmus with pus in the labyrinth should especially appear on turning the eye toward the diseased side. All other descriptions and the observations of a large number of cases which were carried along for weeks and months by Neumann have shown that in labyrinth disease, nystagmus occurs oftener and always stronger when looking toward the healthy side rather than when looking toward the diseased side.

Heine, in a paper on operations on the ear, claims that an abscess of the cerebellum and an uncomplicated case of pus in the labyrinth are manifested by the same train of symptoms—vertigo, ataxia and nystagmus. To avoid an error it is many times necessary to weigh all the symptoms very carefully.

Oppenheim (*Diseases of the Nervous System*) says the signs of labyrinth disease and the vertigo of Ménière's disease will seldom be confused with each other. Still in one case they simulated the disease-picture of cerebellar abscess. It is possible in a simple case of disease of the labyrinth to find the combination of headache, vertigo, vomiting, fever and at times nystagmus.

Schwartz (*The Surgery of Ear Diseases*) says the symptoms which indicate the extension of a purulent inflammation of the middle ear into the labyrinth are severe and consist of subjective noises, suddenly increasing deafness, occipital headache, vomiting, vertigo, ataxia and staggering gait.

Neumann had the opportunity in a number of cases in Politzer's clinic to observe on the one hand "the symptoms of pus in the labyrinth, on the other hand cerebellar abscess, also cases with combination of both diseases." In this way he has seen many symptoms which up to the present the literature has not thought worthy of consideration and which, according to his opinion, are adapted to use in the differential diagnosis between pus in the labyrinth and brain abscess. Neumann considers the time ripe not only to test these symptoms further himself, but also to recommend that his colleagues do the same.

The symptoms common to pus in the labyrinth and cerebellar abscess are disturbed equilibrium, sensation of vertigo, nausea,

vomiting, headache, nystagmus. Optic neuritis is frequently present in cerebellar abscess, while it rarely occurs in pus in the labyrinth. Exceptionally it may occur here also. It is rarely absent in cerebellar abscess in contrast to cerebellar tumor. Absence of rise in temperature is common to pus in the labyrinth and abscess of cerebellum. However, fever may make its appearance in pus in the labyrinth and also in cerebellar abscess. Retraction of the neck may be present in cerebellar abscess as well as in pus in the labyrinth, when the latter is complicated with serous or purulent circumscribed meningitis. Headache, which is especially localized in the occiput, in part also in the forehead, and which often becomes unbearable, seems to be characteristic of cerebellar abscess, while with pus in the labyrinth only slight headache occurs, also in the occipital region.

Disturbed equilibrium often occurs in cerebellar as well as labyrinth disease. It might, however, be absent in both diseases. It is present in cerebellar abscess when the disease has affected the parietal lobe and there is no distal effect on the vermis, and also in pus in the labyrinth. When the labyrinth has for some time been in a state of total suppuration, disturbances of equilibrium are hardly of value in making a differential diagnosis. As already stated, vertigo may be present in cerebellar ataxia, while it is usually absent in the labyrinthine form of ataxia. Neither is the direction of the fall pathognomonic. When a patient with labyrinth disease is told to stand still and close both eyes we are sure he will always fall toward the diseased side. He will also deviate from a straight line when he walks with eyes closed. The disturbance of equilibrium is increased when the patient affected with pus in the labyrinth inclines his head toward the diseased side. In some cases, by inclining the head to the diseased side we get vertigo, nausea or even vomiting. Friedrich finds the contrary to be the case frequently. Neumann also has observed the contrary to be the case. In cerebellar abscess the vertigo is generally increased by the patient lying down on the healthy side, and this is usually followed by vomiting. Koch says these patients also fall toward the healthy side and deviate when they walk toward the healthy side. The symptom to which Neumann would like to call attention in particular is nystagmus.

Nystagmus almost never occurs in cerebral abscess. It is very rarely described in connection with cerebellar abscess, although

Koch, Okada, Jansen and Oppenheim have repeatedly called attention to this symptom. Neumann has almost always seen it in cerebellar abscess, and he wonders that it was not oftener observed by others. Perhaps the reason this symptom has been overlooked depends upon the fact that it frequently occurs only on lateral rotation of the eye ball. Nystagmus is regularly present in pus in the labyrinth as long as the vestibular apparatus is not entirely destroyed, and it is possible it may be present after the destruction of the sheath of the nervus vestibularis, as at first described by Jansen, and repeatedly after him.

This nystagmus is almost always directed towards the healthy side, and especially by looking toward the healthy side. It is either horizontal or rotatory. I would like to add, that in the majority of cases this statement is correct, but that in not a small number of cases besides the nystagmus on looking toward the healthy side, there is also nystagmus generally of the horizontal type on looking toward the diseased side, and that the nystagmus toward the healthy side is often a combination of horizontal and rotatory nystagmus. It is a peculiarity of nystagmus which is caused by disease of the labyrinth that it becomes weaker as the destruction of the labyrinth proceeds and gradually disappears. It is therefore most violent in the first days of the disease of the labyrinth, and becomes weaker in the course of observation or disappears entirely.

The nystagmus referable to the cerebellum is of the same character as that referable to the labyrinth. In the form of this nystagmus we can plainly distinguish a slow and a rapid going process, after which latter we can point out the direction of the nystagmus. We may find nystagmus in cerebellar abscess directed to the healthy as well as to the diseased side. A characteristic of this nystagmus is that it increases in intensity during the advancement of the disease and at last reaches a degree which we never find in labyrinth disease.

Of especial significance are the following facts observed in the Politzer clinic: Nystagmus, which is due to pus in the labyrinth, may in the beginning appear directed toward the diseased side, which later almost entirely disappears, although the nystagmus toward the healthy side continues. It happens especially in abscess of the cerebellum. At first nystagmus exists toward the healthy side, which suddenly becomes a nystagmus toward the diseased side. When this symptom is observed we can with

certainly make a diagnosis of cerebellar abscess and in this way we can exclude nystagmus referable to the labyrinth.

In a great many, if not in most cases of cerebellar abscess, the abscess is combined with pus in the labyrinth. When we perform a radical operation in these cases we encounter either a large fistula in the labyrinth which demands opening the labyrinth, or on exploring we find a deep extra-dural abscess which compels our opening the labyrinth. While nystagmus referable to the labyrinth decreases rapidly in intensity after opening the labyrinth, the nystagmus referable to abscess of the cerebellum is not at all influenced by the labyrinth operations. When we have ascertained these circumstances, we can then positively make a diagnosis of cerebellar abscess and then proceed in the proper manner.

The literature is silent in regard to this change in nystagmus, but Neumann can remember four cases in which the nystagmus on looking toward the diseased side either existed alone or was stronger than on looking toward the healthy side. Perhaps this symptom, which up to the present has been observed in eight cases, would be found oftener by more accurate observation. There are two cases described in the literature by Okada and two cases from the annual report of the Klinik in Halle which support this opinion. With regard to the operative procedures in cases of pus in the labyrinth and deep extra-dural abscess respectively, also in cerebellar abscess complicated with empyema of the sacculus endolymphaticus, Neumann holds the same views as Jansen, Trautmanns, Koch and Okada. In the first place the labyrinth is to be opened from behind and the dura is to be exposed with the sacculus endolymphaticus according to the customary method used in this clinic.

In this way we will often be guided anatomically to the cerebellar abscess through the deep extra-dural abscess which is frequently present, as well as through the necrosis and infiltration of the dura. If in this way the posterior occipital region of the dura has been laid free up to the inner auditory passage we then introduce a knife four to five centimeters long, vertically directed across the sinus corresponding to the forward edge of the cerebellum, making the cut through the dura, where we know these cerebellar abscesses proceeding from the labyrinth have their seat; then vertically across this cut a second, two to three centimeters long, and then with the Preysingsehen brain

knife toward the front, to the inside, to the rear, and upwards in the cerebellum, entering correspondingly deep each time. If no pus appears then an especially constructed bent forceps suitable for this operation should be introduced through the opening in the dura, and in the great majority of cases we shall be successful in finding the existing cerebellar abscess. More difficult is their detection from the posterior pole of the cerebellum when we enter behind the sinus. With regard to the process when preceded by partially healed radical operation, Neumann disagrees with the suggestion of Okada, who advises to attack the abscess from behind the sinus in these cases. Concerning the after treatment of cerebellar abscess, it is in fact sometimes in small abscesses very simple and easy, as Koch has described it, but in large abscesses, for example, in the one observed and cured by Neumann, which was four centimeters deep and four centimeters broad (the high diameter could not be determined on account of the brain pressure), the after treatment became very difficult, as again and again pus gathered behind the introduced drainage apparatus. In addition there were continued vertigo, vomiting and severe headache. In fact it is impossible with our present means to establish a true drainage in brain abscess where the sinus is fistulous and combined with necrosis of the adjoining tissues. The only means which finally did not fail was to change the dressings twice daily. In this case he also had occasion to convince himself of the actually marvelous action of peroxide of hydrogen on the brain abscess, caused by anerobic bacteria. Since symptoms pointed to recent retention, it became necessary repeatedly to enlarge the opening of the abscess cavity with a forceps, and twice to elongate the incision through the dura backward beyond the sinus, and reopen the abscess. At this procedure large amounts of strongly fetid pus were evacuated. But from the moment that he introduced strips of iodoform gauze saturated with a six per cent. solution of peroxide of hydrogen in the abscess cavity and allowed them to remain, the disagreeable odor disappeared, the vomiting discontinued, and the formation of pus stopped as by magic. The patient recuperated visibly, and to-day he is completely cured and follows his vocation. The wound is completely healed, and it stands to reason that where anerobic bacteria are present the hydrogen peroxide giving off oxygen must act as a specific, and he strongly urges the use of this remedy in brain abscess caused by anerobic bacteria.

Editorial

KARLSBAD, *October 6, 189—.*

DEAR PIERREPONT: If you happen to run across Doc Titherington you'd better tell him to go into training, because I expect to be strong enough to lick him by the time I get back. Between that ten-day boat which he recommended and these Dutch doctors, I'm almost well and about broke. You don't really have to take the baths here to get rid of your rheumatism—their bills scare it out of a fellow.

Letters from a Self-Made Merchant to his Son.



The annual reunion of the Alumni Association **Alumni Day**, of the Albany Medical College will occur on Friday, **1907.** May 3, 1907. The graduating exercises of the Class of 1907 will be held in Odd Fellows' Hall at three o'clock, and immediately afterward there will be the usual informal reception at the College. The meeting of the Association will be called in the amphitheater at seven o'clock by President Thomas Wilson of the Class of 1874. The Association will adjourn to the banquet at the Hotel Ten Eyck.

The day will be unique in the history of the College. The program has been so arranged that there shall be no gap in the proceedings. The members of decennial classes and of undergraduate fraternities will be entertained at noon. The circulars issued by the Executive Committee of the Association appear to have awakened enthusiasm, and early and numerous favorable acknowledgments have been received. Lively interest has also been manifested in the new method of election of officers by an Australian ballot.

At a meeting held on February 20, 1907, the Executive Committee, after prolonged discussion, made the following representative nominations and ordered them to be sent to each alumnus:

For President: Mark M. Lown ('77), Rhinebeck, N. Y.; Thomas H. Willard ('87), New York city.

For Vice-Presidents (five to be selected): Walter G. Murphy ('90), Hartford, Conn.; Frederick F. Clark ('96), Westfield, Mass.; Henry B. Whitehorne ('73), Verona, N. J.; Earl D. Fuller ('78), Utica, N. Y.; Charles G. McMullen ('98), Schenectady, N. Y.; Robert F. MacFarlane ('88), Long Island City, N. Y.; Charles Bernstein ('94), Rome, N. Y.; Douglas C. Moriarta ('85), Saratoga, N. Y.

For Recording Secretary: J. Montgomery Mosher ('89), Albany, N. Y.

For Corresponding Secretary: Andrew MacFarlane ('87), Albany, N. Y.

For Treasurer: Robert Babcock ('84), Albany, N. Y.

For Historian: Eugene E. Hinman ('99), Albany, N. Y.

For Executive Committee (four to be selected): John F. Reilly ('83), Rensselaer, N. Y.; Leo H. Neuman ('92), Albany, N. Y.; Henry L. K. Shaw ('96), Albany, N. Y.; James W. Wiltse ('91), Albany, N. Y.; George B. Grady ('96), Watervliet, N. Y.; William J. Wansboro ('95), Albany, N. Y.; Henry W. Johnson ('91), Hudson, N. Y.; Isaac E. Van Hoesen ('03), Coxsackie, N. Y.

The program of the day is as follows:

The Class of 1887 has arranged for a lunch and reunion at the Fort Orange Club at one o'clock. The chairman of the general committee on the Class reunion is Dr. Thomas H. Willard, of New York city, and the local committee consists of Drs. Willis G. Macdonald, Andrew MacFarlane and Charles H. Moore.

Members of the Classes of 1857, 1867, 1877 and 1897 will please register at the College on arrival in town. Members of the reception committee will be in attendance during the forenoon to assist in arrangements for the reunions of these classes.

The Albany Medical College, the Bender Hygienic Laboratory, the Albany Hospital and St. Peter's Hospital will be open for visitation and inspection during the day, and a cordial invitation is extended to the members of the Association to familiarize themselves with the work of these institutions.

12 M. Reunion of Decennial Classes at the College.

3 P. M. Commencement Exercises at Odd Fellows' Hall. Address.

5 P. M. Informal reception at the College. The tellers will be present to receive ballots, not previously mailed. The polls will be open from five until seven o'clock. The Treasurer will receive unpaid dues. The register will be open, and all alumni are requested to register.

7 P. M. The meeting of the Association in the Amphitheatre. Faculty Address of Welcome by Professor Joseph D. Craig ('84). Reports of Executive Committee and Historians. Treasurer's report. Miscellaneous business. President's address: Thomas Wilson, M. D., Class of 1874. Report of tellers.

8:30 P. M. Annual dinner at the Hotel Ten Eyck.



The medical profession of Albany and vicinity
The Visit of were fortunate in having as their guest Professor
Professor Friedrich Müller of the University of Munich.
Müller.

No professor of medicine in Europe has a higher reputation as a clinical teacher or is in greater demand as a consultant everywhere on the continent.

He belongs to that galaxy of brilliant assistants of the dis-

tinguished Gerhardt-Escherich, von Noorden, Seifert, Wiedemann and Grawitz, who, by their successful careers, have demonstrated the thoroughness of their early training.

When von Ziemssen died, Bavaria looked anxiously about for a worthy successor to that distinguished clinician and chose her own son, who, at Bonn, Breslau, Marburg and Basle, had been developing a renown which placed him in the front rank of his profession. Shortly after taking up the professorship of medicine at Munich, he was invited to be the successor of his revered teacher, Gerhardt, in Berlin, and still later of Nothnagel in Vienna. He declined both these enviable positions because he felt that with his modern hospital in Munich he could do better scientific work, though much less remunerative, than in either of the imperial cities. His fame as a clinical teacher has become world-wide. He embodies that rare and happy combination of laboratory worker and clinical observer. His clinical lectures consist not only of a masterly demonstration of the symptoms characteristic of the disease, but also of a lantern slide demonstration of the normal and pathological tissues involved in the disease under consideration, thus enabling the student to look, as it were, straight through the patient and follow the development of the disease *de novo*.

His lecture on such a trite subject as bronchitis was a revelation of what a master-mind can do with the commonplace. He has written, with Professor Seifert, a popular book on diagnosis, which has passed through twelve editions, and is one of the editors of the *Deutsche Archiv für Medizin* and of *Volkmann's Klinischer Vorträge*.

The occasion of his visit to the United States was to deliver one of the Harvey lectures and the Herter lectures.

The success of Professor Müller's lecture raises the hope that the Albany County Medical Society may repeat this delightful experience and invite each year some distinguished physician, foreign or native, to become its guest and honor itself by thus testifying to its appreciation of scientific work.

ANDREW MACFARLANE.

The annual report of The Albany Guild for the Care of the Sick for the year ending January 31, 1907, has recently been issued, and reveals an activity and catholicity in the administration of charity rarely to be found in the work of one organization. Year after year its field of operations has been extended, so that now, with the revelation of its broad purposes, the Guild's achievements may be appropriately designated as marvelous.

The ANNALS has taken occasion for comment each spring upon the appearance of this report. Albany is prodigal in charities. Its public or semi-public eleemosynary institutions number upward of fifty, and their beneficence might be regarded as all-comprehensive. But the Guild, beginning tentatively and cautiously, has found many new ways of doing good without interference with other organizations. Its objects are "the care of the sick, including the employment of nurses, preparation of diet, instruction in home-nursing, health, morals and wholesome living, and the rendering of aid in cases of illness requiring charitable assistance." These purposes are attained by the development of the following named departments: District Nursing, Limited Means Department, Dental Department, Special Obstetrical Department, Diet Kitchen, and Academy Buttery.

DISTRICT NURSING.

The city government divides the city of Albany into five health districts, and appoints a health physician for each district, who administers medical treatment free of charge, upon proper application.

The Albany Guild for the Care of the Sick provides and supports nurses duly certified by some well-known training school, who, acting under the immediate directions of the health physicians, care for the sick poor in their homes, free of charge, where removal to hospitals is not possible. Besides the care of the sick, the Guild nurses are required to instruct the families they visit in the care of their own sick, the preparation of food, the laws of health, morals, and wholesome living.

The South End Dispensary and the Faith Mission Dispensary are each provided with a nurse for the dispensary hours, to pro-

mote order and exert a wholesome moral influence among the patients, and to assist the physicians in any way required.

Any physician may summon a Guild nurse by telephone. Calls are received day or night.

LIMITED MEANS DEPARTMENT.

The Limited Means Department was undertaken at the request of physicians who felt the need of professional nursing for people who cannot pay the regular rates for the service of graduate nurses. The nursing is done by the trained nurses who are on the staff of the Guild. These nurses do not give continuous service. They go in, as does the physician, once or more daily, to give the needed treatment. When this work was undertaken it was thought that daily visitation would cover the demands of this department, and in many cases it is still all that is needed; but when the patient needs constant care the head nurse will place on duty an assistant nurse who is under training. The assistant nurse carries out the orders of the physician under the personal supervision of one of the graduate nurses of the Guild, who continues to give the necessary professional care.

ASSISTANT NURSES.

Applicants are those who do not wish to take a hospital training, either because of age limit or for various other reasons. A satisfactory endorsement of good moral character, certificate of health from a physician, and a *good* common-school education are required.

The training covers two years, preceded by three months' probation to determine the interest in the work and adaptability. The salary begins with ten dollars per month, and increases gradually to twenty dollars towards the end of the training. Lodging is provided, unless the nurse has her own home in town. When she is on a case, her board and laundry are provided by the family where she is in attendance, otherwise she is responsible for her own board and laundry.

The assistant nurse receives her training and experience in the homes of patients of limited means, under the supervision and instruction of a Hospital Graduate nurse of the Guild staff, who is responsible for the case. In the intervals between cases she acquires experience in district work in the homes of the poor,

where she visits with the graduate nurse; she acquires experience in minor surgery at dispensaries, where she assists the graduate nurse. This practical instruction and experience is supplemented by a course of lectures from physicians of recognized standing, extending throughout the two years. There is also the weekly class instruction in physiology, anatomy, hygiene and nursing, in charge of the Head Nurse; and a course in general cooking extending through twenty-five weeks of one year, and a special twelve weeks' course in invalid cooking the following year, in charge of a member of the Diet-Kitchen Staff.

The assistant nurse, under the direction of the graduate nurse, takes charge of the patient and of the patient's room. This care includes ventilation, bed-making, care and disinfecting of utensils, serving meals (and when necessary preparing them, and attending to any additional household duties deemed necessary by the graduate nurse in charge), giving medicines and stimulants, taking temperature, pulse and respiration, and keeping the daily records for the physician.

At the end of the two years, if the training and examinations have been passed satisfactorily, the Guild pin is given, and a certificate conferred which limits the charge for services to fifteen dollars a week, and entitles the nurse to register as a Certified Nurse of the Guild.

STATISTICS, FEBRUARY 1, 1906, TO FEBRUARY 1, 1907.

Number of old cases under treatment February 1, 1906.....	63
Number of new cases.....	1,363
Total number cases cared for during year.....	1,426
Classification (new cases):	
Dispensary	28
District	138
Other charity cases.....	612
Total number charity cases.....	778
Limited means cases.....	579
Emergency cases, for people of means.....	6
	1,363
Removed to hospitals.....	48
Died	95

Obstetrical:

General work of Guild:

Mothers, 351; infants, 343.....	694
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Special Obstetrical Department:

Mothers, 51; infants, 46.....	97
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Visits of Guild nurses (all departments):

Number visits with nursing care.....	14,988
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Number visits for supervision of convalescence.....	2,457
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Total number visits.....	17,445
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Physicians receiving services from Guild nurses:

Health physicians.....	5
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Other physicians.....	111
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Total number physicians.....	116
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Dentists contributing their services.....	5
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Nationality of patients: American, Canadian, Dane, Egyptian, English, French, German, Hebrew, Irish, Italian, Jewish, Negroes, Polish, Russian, Scotch, Syrian, Welsh.

During the summer sixteen afternoons were devoted to the Fresh Air Guild in preparing children for their outing to Vacation Home..

The graduate nurses, together with the assistant nurses, examined and treated the heads of 356 children for parasites, two or three nurses being in attendance each afternoon. These visits are not included in the above report.

DENTAL DEPARTMENT.

The Dental Department was made possible by the voluntary service of Albany dentists who have been able to relieve patients who otherwise would have had little chance of relief.

SPECIAL OBSTETRICAL DEPARTMENT, IN CONNECTION WITH THE ALBANY MEDICAL COLLEGE.

This Department has been in active operation for six years, and in that time has cared for 268 obstetrical patients. The work is carried on under the direction of the head obstetrician, Dr. H. Judson Lipes, Clinical Professor of Obstetrics in the Albany Medical College. The students of the senior class of the College are enrolled for attendance upon obstetrical cases, and thus receive practical training in the home in this very necessary department.

DIET-KITCHEN DEPARTMENT.

This Department was instituted for the purpose of preparing food for the sick. A greater object has been developed by the organization of classes of instruction in the preparation of food, and families have been taught in the home how to utilize their resources. It is noteworthy that cooking classes have been conducted in the hospitals, not only of Albany but of Troy. As a feature of this department was established the

ACADEMY BUTTERY,

for providing noon-day lunches for the students of the Albany Academy, and the Guild now contemplates opening a branch in a prominent business street "where shoppers, especially those from out of town, persons employed in offices and other business places, busy people in general, may find sensible and healthful food."

CARE OF TUBERCULOUS PATIENTS.

The Guild now contemplates extension of its work by sending nurses into houses where reside patients afflicted with tuberculosis. The object of this is not only the relief of the patient but rigid and careful training in prophylaxis, from which much good is to be expected.

Little Biographies

XVII. JOHN BAPTIST MORGAGNI.

1682-1771.

THE greatest advances in anatomy and physiology were made in the early years of the 17th century by Mondinus and Vesalius, by Harvey and Willis. The science of pathology was then practically unknown; its founder came in the person of John Baptist Morgagni, the subject of this brief sketch.

He was born in Forli or Foroli, a little town near Bologna, in 1682. His family, in comfortable circumstances, gave him the opportunity of a good preliminary education in his native town, which we are told boasted a palace by Michael Angelo, a library, and a University. Amid these surroundings Morgagni developed a taste for culture and intellectual pursuits. At fifteen years he went to the University at Bologna to become a pupil under Albertini and Valsalva, at that time in the zenith of his fame as

an anatomist. A youth of optimistic disposition, a hard and persevering worker, he made rapid progress and soon became prosector for Valsalva. He took his degrees of Doctor of Medicine and Doctor of Philosophy in 1701 and immediately entered upon the practice of medicine. When twenty-three years of age he started an independent Academy into which he endeavored to instill his industry and enthusiasm, but failed. The next few years were spent at the Universities at Venice and Padua, after which he returned home to practice for a few years until called to fill the chair of Anatomy in the University at Padua in 1715. He achieved his Professorship at the age of thirty-three years. As a teacher he remained at the University at Padua for sixty years—until his death in 1771.

His personal life was a happy one, his popularity among physicians was large both as a teacher and consultant.

He was blest with a desire to trace symptoms to their source, and, being already an anatomist, it was only natural that he should associate the diseased conditions of organs with the symptoms of disease. By so doing he laid the foundation of pathology and by his originality and tremendous industry accumulated a vast amount of knowledge of the pathological changes in disease. His observations, first written in the form of letters to a colleague, he afterwards in his eightieth year collected in his "*De Sedibus et Causis Morborum per Anatomen Indagatis*," the most important and most famous of his literary works.

He discovered much that was new in medicine and corrected much that was wrong. The small cyst often found attached to the fimbriated extremity of the Fallopian tube is called the hydatid of Morgagni and the valves and sinuses in the anal canal were discovered by him. The subjects upon which he wrote are too numerous to mention them all here, but his observations upon aneurisms of the aorta, intermittent pulse and cerebral apoplexy have remained unquestioned to the present time.

About him in Padua were gathered the foremost scholars of the times; of these Scarpa became the most famous.

He died at the age of ninety years a famous man, known and honored in all the centers of intellectual thought in Europe. In his native town the people placed a bust of him in the public hall, and about the pedestal was added

Hic est, ut perhibent Doctorum corda vivorum
Primis in Humani corporis Historia.

HARRY W. CAREY.

Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR MARCH, 1907.

Deaths.

	1903	1904	1905	1906	1907
Consumption	21	25	18	17	28
Typhoid Fever	1	1	3	2	5
Scarlet Fever	2	2	....	....	....
Measles .....	....	....	1	....	2
Whooping-cough	6	....	1	1	....
Diphtheria and Croup	2	....	1	1	4
Grippe	6	....	4	3	2
Diarrheal Diseases	1	3	1	1	1
Pneumonia	14	16	13	19	16
Broncho-pneumonia	4	6	8	6	2
Apoplexy	11	10	9	13	7
Bright's Disease	20	27	21	13	14
Cancers	6	3	7	13	9
Accidents and Violence	12	5	6	4	2
Deaths under one year	20	29	24	10	17
Deaths over seventy years.....	39	53	32	28	36
<hr/>					
Total deaths	175	212	161	152	189
Death rate	20.59	24.95	18.21	17.89	21.24
Death rate less nonresidents..	19.18	23.65	16.74	17.30	15.41

Deaths in Institutions.

	1902		1903		1904		1905		1906		1907	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital	10	6	16	5	17	6	7	8	7	3	16	9
Albany Orphan Asylum. ..	..	2	1	..	..	..	..	..	1	..	..	..
Child's Hospital .....	..	3	1	1	2	1	..	..	1	..	1	1
County House	4	2	4	2	7	..	..	..	4	2	4	2
Home for Aged Men....	..	..	2	..	4	1	..	..	..	..	1	1
Homeopathic Hospital ..	..	..	3	..	3	..	3	..	..	..	3	..
Hospital for Incurables. 1	..	..	1	..	1	..	..	..	..	..	..	..
Little Sisters of the Poor. 1	..	..	2	..	4	1	4	..	2	..	1	1
Penitentiary	1	1	..	..	..	..	..	..	..	..	..	..
Public Places	4	2	2	1	..	..	1	..	..	..	..	1
St. Margaret's House ..	1	..	..	..	1	..	..	2	..	..	..	1
St. Peter's Hospital	6	2	5	1	6	1	7	2	4	..	5	2
Sacred Heart Convent ..	..	..	..	..	..	..	..	..	2	..	..	..

Births	76
Marriages	34
Still and premature births	9

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were three hundred and twenty-five inspections made, of which two hundred and five were old buildings and one hundred and twenty new buildings. There were fifty iron drains laid, eighteen connections to street sewers, twenty-one tile drains, fifteen cesspools, fifty-one wash basins, seventy-five sinks, forty-five bath tubs, thirty-one wash trays, two trap hoppers in yards, one hundred and fifteen tank closets. There were one hundred and thirty permits issued, of which one hundred and nine were for plumbing, and twenty-one for building purposes. There were thirty-six plans submitted, of which eleven were of old buildings and twenty-five of new buildings. Three houses were tested on complaint with the blue, red test, and there were eleven water tests made. Twenty-four houses were examined on complaint and fifty-eight were re-examined. Fifteen complaints were found to be valid and nine without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1903	1904	1905	1906	1907
Typhoid Fever	5	12	4	3	3
Scarlet Fever	13	29	7	18	10
Diphtheria and Croup	11	13	2	10	47
Chickenpox	11	6	10	5	8
Measles	22	32	454	3	4
Consumption	4	....	3	1	38
Totals	66	92	480	40	110

Contagious Disease in Relation to Public Schools.

	<i>Reported.</i>			<i>Deaths.</i>		
	D.	S.	F.	D.	S.	F.
Public School No. 1	4					
Public School No. 2	1					
Public School No. 14	5					
Public School No. 15	2					
Public School No. 24	1					
St. John's School	1					
St. Patrick's School	1					
Medical College	1					

Number of days quarantine for diphtheria:

Longest	55	Shortest	8	Average	23 7-25
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Number of days quarantine for scarlet fever:

Longest 62 Shortest 22 Average 35 2-3

Fumigations:

Houses 48 Rooms 11

Cases of diphtheria reported 47

Cases in which antitoxin was used 44

Cases in which antitoxin was not used 3

Deaths after use of antitoxin 3

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1903	1904	1905	1906	1907
Initial positive	8	10	3	7	44
Initial negative	32	46	17	45	84
Release positive	30	14	5	32	110
Release negative	28	21	....	18	257
Failed	1	....	....	....	26
Totals	99	91	25	107	521

Sputum for tuberculosis:

Initial positive 10

Initial negative 15

MISCELLANEOUS.

Inspection of mercantile establishments 165

Mercantile certificates issued to children 37

Factory certificates issued to children 13

Children's birth records on file 18

Number of written complaints of nuisances 50

Privy vaults 11

Plumbing 16

Other miscellaneous complaints 23

Total number of dead animals removed 529

Cases assigned to health physicians 69

Calls made 288

BUREAU OF MARKETS AND MILK.

Milk dealers found to be out of business.....

Wagons and milk in clean condition 3

Wagons and milk in unclean condition.....

Ice on cans

Butter fats below 3%

Butter fats from 3% to 3.5%

Butter fats from 3.5% to 4% 3

Butter fats over 4%

Solids below 12%

Solids from 12% to 12.5% 3

BUREAU OF MARKETS AND MILK—*Continued*

Solids from 12.5% to 13% .....	.....
Solids over 13% .....	.....
Meat condemned .....	.....

BUREAU OF MILK.

No.	Specific Gravity.	Butter Fats. 3.5% to 4%	Solids. 12.5% to 13%
35	33.1%	I	I
79	33.1%	I	I
149	33.1%	I	I

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

A regular meeting of the Medical Society of the County of Albany was held in the Albany Medical College on Wednesday evening, March 13, 1907.

The meeting was called to order at 8:45 P. M., President Lempe in the chair. The Secretary, Dr. Laird, being absent on account of illness, Dr. C. H. Moore was appointed Secretary *pro tem*.

The following members were present: Drs. Applebee, Bedell, A. J., Blair, Blessing, Bristol, Classen, Craig, Curtis, De Voe, Gutman, Hacker, Hale, W. S., Hinman, Holding, Jenkins, Keens, Lanahan, Le Brun, Lempe, Lewi, Lipes, Lomax, MacFarlane, McHarg, McKenna, Moore, C. H., Morrow, Moston, Myers, Newell, O'Leary, D. V., Sr., O'Leary, D. V., Jr., Papen, Geo. W., Sr., Pease, Rooney, Rulison, Ryan, Sheldon, Stevenson, Theisen, Vander Veer, A., Vander Veer, J. N., Van Slyke, Wansboro; also invited guests: Dr. La Belle of Essex, Lewis county, Dr. Johnson of Schenectady, and members of the graduating class of the Albany Medical College.

1. *Reading of the minutes of last meeting.*

On motion of Dr. CRAIG, duly seconded, the reading of the minutes was dispensed with, they standing as corrected by those who had participated in the discussion.

2. *Reports of officers and committees.*

Dr. D. V. O'LEARY, Jr., chairman of the special committee appointed to look into the matter of the proper disposal of the garbage and ashes of Albany, reported progress and asked extension of time to report. On motion, duly seconded, this was granted.

3. *Election of members.*

No names were proposed.

4. *Unfinished business.*

No unfinished business was brought before the Society.

5. *New business.*

No new business was brought before the Society.

6. *Scientific program.*

SYMPOSIUM ON SMALLPOX.

"The Harvard Medical College Series of Preparations of Smallpox Lesions," loaned by Dr. COUNCILMAN of Boston was on exhibition and was studied with interest by the members of the Society.

An address on "The Diagnosis of Smallpox," illustrated by lantern slides, was given by Dr. F. C. CURTIS.

Dr. H. D. PEASE discussed "Vaccination and Methods of Producing Vaccine."

Dr. CRAIG, on account of the lateness of the hour, presented an abstract only of his paper, "Municipal Problems of Quarantine of Smallpox."

Dr. A. VANDER VEER moved that a vote of thanks be extended to the different speakers for their interesting and entertaining presentation of this important subject. The motion was seconded and carried.

Motion to adjourn was seconded and carried. The Society adjourned.

C. H. MOORE, *Secretary pro tem.*

GEORGE G. LEMPE, *President.*

SPECIAL MEETING OF THE SOCIETY TO MEET DR. MÜLLER.

A special meeting of the Medical Society of the County of Albany was held in the rooms of the Albany Historical and Art Society, on the evening of March 30, 1907, to meet Dr. Friederich Müller, Professor of Medicine, University of Munich, Germany. Invitations had been sent to all the members of the Third District Branch of the State Medical Society, many of whom attended the meeting. Physicians from neighboring societies not in the Third District were also present, so that Dr. Müller was greeted by an audience of nearly two hundred and fifty. Dr. GEORGE G. LEMPE, the President of the Medical Society of Albany County, presided. Dr. S. B. WARD, Chairman of the Committee of Arrangements, introduced Dr. Müller, who gave an address in English on "Bronchitis." On motion of Dr. A. VANDER VEER, Dr. Müller was given a vote of thanks by the Society.

ARTHUR T. LAIRD, *Secretary.*

GEORGE GUSTAV LEMPE, *President.*

A regular meeting of the Society was held in the Albany Medical College on Wednesday evening, April 10, 1907. About sixty members were present, besides invited guests.

The Committee having in charge the matter of calling the attention of the city authorities to the need of providing means for the collection and disposal of garbage, made a report, and was continued in office until its work should be completed.

A motion was introduced by Dr. GUTMAN, and carried, to the effect that the proper authorities of the City of Albany be made acquainted with the sentiment of the Society that a system of medical inspection of school children should be established.

The scientific program consisted of the presentation of a paper by Prof. ABRAHAM JACOBI of New York on "Ulcer of the Stomach."

The corrected minutes of this meeting will appear in the next number of the ANNALS.

The annual meeting of the Society will be held on May 8, 1907.

Medical News

Edited by Arthur J. Bedell, M. D.

ALBANY HOSPITAL.—The Governors of the Albany Hospital have issued the following "Annual Appeal:"

In presenting this appeal for the year 1907, the Governors of the Albany Hospital respectfully call to the attention of the citizens and other friends, the work being carried on at the hospital and urge the co-operation of all in its continuance and extension.

The past year has seen the opening of the new building, Pavilion G, designed by the city of Albany for the care of contagious diseases—erysipelas, measles, scarlet fever, chicken pox and diphtheria, and placed under the care and management of the hospital.

For many years the city has needed such a building, and already we have seen the wards filled and crowded. This alone shows the work done and the benefits the citizens have received.

During the year ending February 28, 1907, there were 1,234 more patients treated in the hospital than during the previous year, showing the increase in the work of the hospital and the consequent increase in the cost of administration.

Much has been done during the year in the line of improvements—a new ambulance has been purchased for the use of contagious patients, and a house distinct from the ambulance barn has been arranged for the use of the ambulance.

The upper ward of Pavilion A and the connecting corridor have been painted and the rooms renewed, the whole floor having been thoroughly overhauled; the lower ward of this pavilion has been renovated and the rooms repainted. Early in the summer a new floor of Welsh tile was laid in the bakery, and the lower dining-rooms were repainted, making them more cheerful and attractive.

The past year has seen a general increase in the cost of all supplies, and the expenses have consequently increased, with the prospect of further increase.

It is quite generally felt that labor is not so plentiful and not so obtainable at rates which have prevailed in former years—items which must be considered during the coming year and items which will add to the expense.

The Nurses' Home, already filled to overcrowding, no longer serves the purpose of properly housing the nurses, who labor so long and so diligently caring for the sick.

This work, so particular in its detail, so arduous in its performance, so unrelenting in its demands that the nurse be scrupulously vigilant, exactly faithful in the bedside care and all-observant of every detail of patient and surroundings, must exhaust every atom of reserve power the nurse may have.

Nurses frequently break down under the strain and many have given up the profession in the early days of training.

To enable the nurse to pass through the long hours of watching, waiting, and all the time observing and intelligently knowing the conditions of change as soon as they arise—in a word, to do her work thoroughly and well—it is necessary that she have health and live under the best surroundings. For these reasons the building of a new home should be no longer delayed.

As we mentioned in our last appeal, the need of relief for the consumptive is still urged, and we look forward to the time when the Albany Hospital will be provided with a building suitable for such a purpose.

The generosity of the citizens of Albany and our other friends in former years is most gratefully acknowledged, and we urge and seek the continued co-operation in the work of the hospital, and especially for the coming year.

Summary of Medical and Surgical Report.—*Number of Patients Cared for in Hospital.*—In hospital, March 1, 1906, 222; admitted during the year, 3,898; total number treated, 4,120. Discharged, 3,608; died, 241; in hospital, March 1, 1907, 271; total, 4,120. Total for 1906, 2,886; increase for year, 1,234. *Out Patient Department.*—Number of treatments received by patients from March 1, 1906, to March 1, 1907: males, 1,758; females, 1,479; total, 3,237. Number of prescriptions made up and given away to needy patients, 2,360.

THE ALBANY GUILD FOR THE CARE OF THE SICK; STATISTICS FOR MARCH, 1907.—Number of new cases, 128; classified as follows: dispensary patients receiving home care, 2; district cases reported by the health physicians, 12; charity cases reported by other physicians, 65; patients of limited means, 49; old cases still under treatment, 59; total number of patients under nursing care during the month, 187. Classification of diseases (new cases): medical, 37; surgical, 8; gynecological, 5; obstetrical, 37 mothers and 33 infants under professional care; dental, 6; throat and nose, 2; contagious diseases in medical list, 5; removed to hospitals, 7; deaths, 4.

Special obstetrical department.—Number of obstetricians in charge of cases, 1; medical students in attendance, 6; Guild nurses, 5; patients, 5; number of visits by head obstetrician, 4; by the medical students, 38; by the Guild nurses, 60; total number of visits for this department, 102. Visits of Guild nurses (all departments).—Number of visits with nursing treatment, 1,183; for professional supervision of convalescents, 223; total number of visits, 1,406. Six graduate nurses and five assistant nurses were on duty. Cases were reported to the Guild by three of the health physicians and by 39 other physicians and by 4 dentists.

GOVERNMENT HOSPITAL FOR THE INSANE.—The United States Civil Service Commission announces an examination on June 13-14, 1907, to secure eligibles from which to make certification to fill at least five vacancies in the position of medical interne (male), at \$600 per annum each, with maintenance, in the Government Hospital for the Insane, Washington, D. C., and vacancies as they may occur in any branch of the service requiring similar qualifications.

The Department states that it reserves the right to continue or terminate appointment at the end of one year, or to promote the appointee at the expiration of that length of service.

The examination will consist of the subjects mentioned below, weighted as indicated:

<i>Subjects.</i>	<i>Weights.</i>
1. Letter-writing (the subject-matter on a topic relative to the practice of medicine)	5
2. Anatomy and physiology (general questions on anatomy and physiology, and histologic or minute anatomy)....	15
3. Chemistry, materia medica, and therapeutics (elementary questions in inorganic and organic chemistry; the physiological action and therapeutic uses and doses of drugs)	10
4. Surgery and surgical pathology (general surgery, surgical diagnosis; the pathology of surgical diseases).....	20
5. General pathology and practice (the symptomatology, etiology, diagnosis, pathology, and treatment of disease)..	25
6. Bacteriology and hygiene (bacteriologic methods, especially those relating to diagnosis; the application of hygienic methods to prophylaxis and treatment).....	10
7. Obstetrics and gynecology (the general practice of obstetrics; diseases of women, their pathology, diagnosis, symptoms, and treatment, medical and surgical).....	15
Total	100

Two days will be required for this examination. Men only will be admitted.

Age limit, twenty years or over on the date of the examination.

This examination is open to all citizens of the United States who comply with the requirements.

Applicants must indicate, in answer to question fifteen of the application form, that they are graduates of reputable medical colleges.

This announcement contains all information which is communicated to applicants regarding the scope of the examination, the vacancy or vacancies to be filled, and the qualifications required.

Applicants should at once apply either to the United States Civil Service Commission, Washington, D C., or to the secretary of the board of examiners at any place mentioned in the list printed hereon, for application Form 1312. No application will be accepted unless properly executed and filed with the Commission at Washington. In applying for

this examination the exact title as given at the head of this announcement should be used in the application.

As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will therefore arrange to examine any applicant whose application is received in time to permit the shipment of the necessary papers.

COLLEGE OF PHARMACY.—The twenty-fifth annual meeting of the Alumni Association of the College of Pharmacy was held April 9, 1907. At 3:00 P. M. the regular meeting was held in Alumni Hall. At 8:00 P. M. the commencement exercises were held at Odd Fellows' Hall. Mr. James McElroy gave the address. At 10 P. M. the annual dinner was had at the Ten Eyck. Mr. Robert V. Coon, '97, was elected president of the Alumni; Mr. W. B. Hogan, vice-president; Cicero Clifford, second vice-president; Wm. A. Larkin, secretary; Edwin C. Hutman, treasurer.

A committee, consisting of the president, secretary, treasurer, Mr. Richardson, of Cambridge, and Mr. Wiesendanger, of Yonkers, were appointed to start the building fund. The project of a separate building for the College of Pharmacy was discussed.

AMERICAN NEUROLOGICAL ASSOCIATION.—The thirty-third annual meeting will be held in Washington, D. C., in conjunction with the Congress of American Physicians and Surgeons, on May 7, 8 and 9, 1907. There will be one session daily, from 9:30 A. M. to 1 P. M.

The headquarters of the Association will be at the New Willard Hotel, where the sessions will be held. You are advised to secure your hotel accommodations at as early a date as possible.

The annual dinner will be held on Tuesday evening, May 7th.

The council announces that the dues for 1907 will be five dollars.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—The sixty-third annual meeting of the American Medico-Psychological Association will be held in Washington, D. C., Tuesday, Wednesday and Thursday, May 7th, 8th and 9th, and Friday and Saturday, May 10th and 11th, on the Jamestown Exposition grounds, Norfolk, Virginia. The meeting at Washington will be in conjunction with the Congress of American Physicians and Surgeons, of which this Association is one of the constituent societies.

The headquarters of the Association at Washington will be the New Willard Hotel. Dr. William A. White, Superintendent of the Government Hospital for the Insane, is the Chairman of the Committee of Arrangements. Tuesday afternoon and evening, May 7th, will be given to the meetings of the Congress of American Physicians and Surgeons. On Wednesday afternoon a visit will be made to the Government Hospital for the Insane. On Thursday evening, at 6:30 o'clock, a boat will be taken for the Exposition. The headquarters at the Exposition will be at the Inside Inn.

The following material for the programme has been arranged for:

Discussions.—"After Care of the Insane," William Mabon, M. D., New York city; Hon. Homer Folks, Secretary State Charities Aid Association, New York; Robert M. Elliott, M. D., New York. "Shorter Hours for Attendants and Nurses," Alfred I. Noble, M. D., Kalamazoo, Mich.; Arthur V. Goss, M. D., Taunton, Mass.; Charles G. Wagner, M. D., Binghamton, N. Y. "Alcohol as an Etiological Factor in Mental Disease," G. H. Kirby, M. D., New York; Henry A. Cotton, M. D., Hathorne, Mass.; and others. "Reception Hospitals, Psychopathic Wards, and Psychopathic Hospitals," Adolf Meyer, M. D., New York city; Albert M. Barrett, M. D., Ann Harbor, Mich.; Minas M. Gregory, M. D., New York city; Charles P. Bancroft, M. D., Concord, N. H.

Papers.—The Desirability of Popular Lectures on Insanity, by Henry R. Stedman, M. D., Boston, Mass. The Polyneuritic Psychosis or Korsakoff's Disease, by Chas. K. Mills, M. D., Philadelphia, Pa., and A. Reginald Allen, M. D., Philadelphia, Pa. The Melancholia-Maniacal Psychosis or Functional Insanity, by Edward R. Cowles, M. D., Boston, Mass. The Rest Treatment, as applied in Mental Disease, by Frank P. Norbury, M. D., Jacksonville, Ill. Toxemia as a Factor in the Etiology, Prognosis and Treatment of Insanity, by E. H. Pomeroy, M. D., Monterey, Tenn. Simplified Spelling and Some Medico-Psychologic Terms, by William C. Krauss, M. D., Buffalo, N. Y. Metabolism in the Insane, with Special Reference to General Paralysis, by Otto Folin, M. D., Waverley, Mass. Some Observations on General Paralysis and Cerebral Syphilis, by C. B. Dunlap, M. D., New York city. Megalomania in General Paralysis, by Joseph Clement Clark, M. D., Sykesville, Md. Arterio-Sclerosis in Relation to Mental Disease, considered clinically by C. Macfie Campbell, M. B., New York; considered anatomically by Glanville Y. Rusk, M. D., New York. Studies in Aphasia, by William McDonald, M. D., Providence, R. I. Oponins and the Employment of Therapeutic Vaccines in the Treatment of General Paralysis, by John D. O'Brien, M. D., Masillon, Ohio. The Treatment of Excitement by Continuous Baths, by Samuel W. Hamilton, M. D., New York city. Prognosis in Cases of Mental Disease Showing the Feeling of Unreality, by F. H. Packard, M. D., Waverley, Mass. The Manifestations of Hysteria as Insanity, by Robert C. Woodman, M. D., Middletown, N. Y. Hysteria: A Much Abused Neurosis, by C. Eugene Riggs, M. D., St. Paul, Minn. Hysteria in the Male, by Ernest L. Bullard, M. D., Milwaukee, Wis. The Forms of Dementia Precox, by Wm. Rush Dunton, M. D., Towson, Md. The Care of Imbeciles in Hospitals for the Insane and Elsewhere, by J. M. Keniston, M. D., Middletown, Conn. Our Duty to the Chronic Insane, by J. T. W. Rowe, M. D., New York city. Recidivation in Mental Disease, by George Villeneuve, M. D., Montreal, Que. Borderland Insanity, by John Punton, M. D., Kansas City, Mo. A Few Fallacies in the Treatment of Epilepsy by Drugs, by A. L. Skoog, M. D., Pueblo, Col.

CHARLES W. PILGRIM, M. D., *Secretary*.

AIR, LIGHT AND CLEANLINESS A PROTECTION AGAINST TUBERCULOSIS IN CATTLE.—Dr. D. E. Salmon, late Chief of the Bureau of Animal Industry, has produced a valuable report on "Tuberculosis of the Food-Producing Animals," which the United States Department of Agriculture has just published. Dr. Salmon calls attention to the fact that, while there has been in the past much difference of opinion as to the effect of animal tuberculosis upon the public health, the majority of students of the subject are now convinced that bovine tuberculosis may be communicated to human beings, and that, therefore, greater precautions should be taken to protect human beings from animal tuberculosis than are now generally followed. The careful inspection of meat-producing animals at the time of slaughter and of the cows from which milk, cream and butter are produced is urged, and practical advice is given as to the methods of eradicating tuberculosis and of caring for cattle in such a way that the disease will not spread through herds.

Dr. Salmon makes the following statement: "The ideal conditions for health and for resistance to tuberculosis contagion are life in the open air and an abundant supply of nutritious food. The greater the departure made from these ideal conditions the more is the development of tuberculosis favored."

Life in the open air for cattle, as with man, is not always sufficient to prevent infection with tuberculosis or to cure it, but its influence is favorable and reduces the chances of infection to the smallest proportion, while at the same time it places the diseased animal under the best conditions for recovery.

In most stables the conditions of life are unfavorable in the extreme and radically different from what they are in the open air. Most stables have no provision for ventilation; either there are drafts of air upon the animal favoring the production of colds and catarrh, or there is an insufficient supply of oxygen. This has an important bearing on the spread of tuberculosis in cattle, for, where there is no ventilation, disease germs carried into a stable are likely to remain there until they infect the animals. It is just as desirable that there should be ample provision to let light into the stable, for the direct rays of the sun are of especial value for destroying the germs of consumption and for increasing the resisting power of the animals. In addition to this, the sun's rays aid in drying and disinfecting the stable. Light is also necessary to enable those who care for stables to see the dust and filth and to put it into proper sanitary condition. Dark stables are almost universally dirty, damp and unhealthy.

A stable must be clean to be sanitary. Cleanliness is the very first principle of sanitation and it must be continually kept in view. Not only must the filth on the surface of the floors be removed, but there must be no channels by which it can gather between or beneath the flooring to ferment, putrefy, and pollute the atmosphere with unhealthful gases. The dust which gathers upon the walls of many cow stables is often more objectionable than the filth upon the floors. In infected stables the dust is certain to contain tubercle bacilli, and these are in a condition to be easily floated into the atmosphere and breathed into the animal's lungs. The first thing is to have the stable so constructed that it is easy to clean

it thoroughly, and the second thing is to see that it is frequently cleaned and that it is occasionally disinfected. If there are tuberculous cows in a herd the food boxes and mangers soiled with the saliva of the diseased animals are the most dangerous parts of the stable. Next to these are the parts covered with thin layers of manure, which becomes dry and pulverized and is carried into the air as dust. Not less dangerous is the dust which has accumulated on the walls and on every part of the stable where it can lodge. In cleaning such a stable the walls and ceilings should be swept and washed as well as the floors, and the whole interior should be drenched with the disinfecting liquid.

FOLIA UROLOGICA.—With Professor James Israel of Berlin as Editor-in-Chief, Professor A. Kollmann of Leipzig, Dr. G. Kulisch of Halle, and Dr. W. Tamms of Leipzig as Associate Editors, and the other principal urologists of Europe as collaborators, these new international archives are announced by the house of W. Klinkhardt, Leipzig. Exhaustive original articles with colored plates and illustrations will be the principal feature of *Folia Urologica*. Contributions will be published in the four languages that are officially used in Congresses and each paper will be summarized in the three other languages. The new publication will contain a department, entitled "Events in Urology," in which the regular collaborators will periodically report on the advances in this specialty, after having tested them critically in their respective services and laboratories. Finally *Folia Urologica* is to serve as a means of collecting the Annual Reports on urological work in hospitals, clinics, etc., throughout the world. With a view to publishing contributions as quickly as possible, the issues of *Folia Urologica* will appear as often as required. Contributions from North, Central and South American authors may be sent to either of the American editorial representatives, William N. Wishard, M. D., Newton-Claypool Building, Indianapolis, Ind., or Ferd. C. Valentine, 171 West 71st Street, New York.

THE PATHOLOGICAL SOCIETY OF PHILADELPHIA, which is one of the oldest, if not the oldest, society of its kind on this continent, will celebrate its semi-centennial in May, 1907. Instituted at a time when pathology scarcely had a foothold in this country, it has kept pace with the tremendous development of that science, and has had a share, not only in giving Philadelphia its eminence as a medical center, but also in fostering the scientific spirit in America.

The celebration, which may rightly be considered an event of national importance, will extend over two days — Friday, May 10th, and Saturday, May 11th. On the first day addresses will be delivered by Dr. Frederick G. Novy, of Ann Arbor, Michigan, on "The Rôle of Protozoa in Pathology;" by Dr. Simon Flexner, of the Rockefeller Institute, New York, on "The Newer Pathology;" and by Dr. A. E. Taylor, of the University of California, on "The Dynamic Point of View in Pathology."

In the afternoon, at four o'clock, a commemorative meeting will be held in the Pennsylvania Hospital, where the first meetings of the society, in 1857, took place. At this meeting Dr. William Osler, Regius Professor

of Medicine, Oxford University, will deliver an address on "Pathology and Practice."

At a dinner in the evening, prominent men from all parts of the country will respond to toasts.

An exhibition meeting of interest to pathologists, clinicians and surgeons will be held on Saturday, May 11th.

The date of the celebration will enable those to be present who have been in attendance upon the Congress in Washington, and those who are coming east a little in advance of the meeting of the American Medical Association.

PERSONALS.—DR. C. F. CLOWE of Schenectady, N. Y. (A. M. C. '88) is in Europe.

—DR. LEE ROY DUNBAR (A. M. C. '06) has been appointed assistant physician at the Manhattan State Hospital, Ward's Island, N. Y.

—DR. LESTER BETTS (A. M. C. '99) has moved from Center Street to 281 State street, Schenectady, N. Y.

—DR. GEORGE C. MERRIMAN (A. M. C. '97) has moved to Preston Park, Pa.

—DR. GERALD GRIFFEN (A. M. C. '01) has returned from a visit to Rochester, Minn.

—DR. JAMES W. WHITE (A. M. C. '05) has started practice in Fonda, N. Y.

—DR. JOSEPH A. COX (A. M. C. '01) has moved from State street to 35 Clinton avenue, Albany, N. Y.

In Memoriam

REED B. BONTECOU, M. D.

The death of Dr. Bontecou removes a strong medical personality from the profession of Eastern New York. Although not an alumnus of the Albany Medical College, Dr. Bontecou's career has been so active and so interesting, one may almost say picturesque, that the ANNALS takes the liberty of reproducing from the Troy Times the following biographical sketch:

Dr. Reed B. Bontecou, the oldest physician and surgeon of Troy, N. Y., and during a large share of his career one of the most famous members of his profession in this country, died a few minutes before midnight, March 27, 1907, at his residence, 82 Fourth street. Dr. Bontecou had been ill but a week, retaining remarkable health and vigor up to a few days before his death, when he suddenly collapsed after climbing a stairs on a visit to a patient. He sank rapidly, then revived, and, regaining

consciousness, recognized and talked with those about him. Some slight hopes of prolonging his life were entertained but he again sank rapidly, and the end came peacefully. Although small in stature he had a remarkable constitution, a vigorous and active body and a clear head. He was genial in disposition and had a host of friends, not only in the medical and scientific world, but among all with whom he came in contact.

In nearly sixty years of active medical practice he had been among the leaders in his profession, always a student, as well as opening the way as a pioneer in many fields of research and contributing much to those great advances in medicine and surgery which have established the profession on a true scientific basis.

Reed Brockway Bontecou, B. N. S., M. D., was born in Troy, April 22, 1824, son of Peter and Samantha (Brockway) Bontecou, of Huguenot and Scotch descent, respectively. He received his education in the Troy schools, Lancasterian School, the Charles Anthony Academy, the Troy Conference Academy at Poultney, Vt., and at the Rensselaer Polytechnic Institute, from which he received the degree of B. N. S. in 1842. While yet at the Institute he became an intimate friend of Dr. John Wright, one of the professors of natural history and a man devoted to the sciences, and it was his association with Dr. Wright and Dr. A. G. Skilton that instilled him with the idea of studying medicine. After being graduated from the Institute he studied with Drs. Wright and Skilton and Dr. Thomas C. Brinsmade. In 1844 and 1845 he attended lectures at the Medical Department of the University of the City of New York. He spent nearly the entire year of 1846 on a voyage up the Amazon river, South America, exploring the region and studying natural science in the interest of the Troy Lyceum of Natural History, a pioneer society organized in that city for the development and advancement of scientific study and investigation. He studied the flora and fauna of that section of South America, collecting and preserving many valuable and rare scientific specimens, which were added to the collection of the Troy Lyceum.

Learning on his return of the untimely death of his friend, Dr. John Wright, he entered the Castleton Medical College at Castleton, Vt., on the advice of his preceptor, Dr. Thomas C. Brinsmade, to obtain his medical degree so as to fill the position with Dr. Brinsmade made vacant by the death of Dr. Wright. He was graduated from Castleton College in May, 1847, with the degree of M. D. He at once entered the practice of medicine and surgery with Dr. Brinsmade in Troy. He took a leading position in his profession locally, and his researches and the application of the knowledge gained gave him a much wider reputation. His great surgical achievements were accomplished in the pre-Listerian period, before the development of the germ theory of disease. He was styled "the little Napoleon of surgery" and handled the scalpel with a skill exceeded by no other American surgeon. Dr. Bontecou's contributions to medical science were so many that it would be difficult to enumerate them. He was the first in this country and the second in the world to attempt the repair of typhoid perforation.

In 1848, anticipating an epidemic of Asiatic cholera, he hastened to New York, where the disease had been introduced from an incoming ship, and



REED BROCKWAY BONTECUE, M.D.

there studied the measures which were being used to prevent the spread of the disease. He had scarcely returned to Troy when the dreaded scourge broke out and continued until 1855, when it ceased, only to break out again in 1858. Being in full charge of the Troy Hospital, then located at Fifth avenue and Washington street, he practiced the transfusion of blood and medicated solutions into the veins of the unfortunate victims with great success.

When the first regiment of volunteer soldiers who served in the War of the Rebellion was organized in Troy and was mustered in as the Second Regiment May 14, 1861, but one month after the bombardment of Fort Sumter, Dr. Reed B. Bontecou was the surgeon of the regiment. He had been a commissioned surgeon of the old Twenty-fourth Regiment New York State Militia, since 1849. In September, 1861, he was commissioned Brigade Surgeon and Surgeon of Volunteers and was in the Federal service until June, 1866. Dr. Bontecou performed his first operations at the battle of Big Bethel, Va., June 10, 1861; was present at the fight between the Monitor and Merrimac, at the capture of Yorktown, Va., was in charge of the Hygeia United States Army General Hospital, Fortress Monroe, Va., from September, 1861, until its destruction in September, 1862, when he was ordered to the Army of the Potomac for duty in the Surgeon-General's office. Soon after, however, he was ordered to the Department of the South during the yellow fever and was in attendance on General Mitchell, who died of the disease. Dr. Bontecou was subsequently appointed chief medical officer of all the hospitals at Beaufort, S. C. He served in the ironclad attack on Fort Sumter and was soon after placed in charge of the hospital steamer "Cosmopolitan," lying off Charleston, S. C., during the siege of that city. Early in October, 1863, he was ordered to Washington, D. C., to take charge of the Harewood United States Army General Hospital, and was on duty there until its discontinuance in May, 1866. After being employed on various boards of investigation he was mustered out in June, 1866. Dr. Bontecou was brevetted Lieutenant-Colonel and Colonel of Volunteers March 13, 1865, for faithful and meritorious service during the war.

Returning to Troy in 1866 he re-entered the private practice of medicine which he continued with uniform success to the time of his death. Dr. Bontecou had been a member of the Rensselaer County Medical Society nearly sixty years and was its president in 1891 and 1892. He was an active member of the Medical Society of the State of New York, of the American Medical Association and of the Association of American Surgeons. He was a member of the council of the Section on Military and Naval Surgery and Medicine of the Ninth International Medical Congress at Washington, D. C., in 1887, and was a delegate to the Tenth International Medical Congress at Berlin, Germany, in 1890, and while abroad in 1891 and 1892 he made a tour of the principal hospitals of England and the European continent. He was the first surgeon of the Troy Hospital, was surgeon of the Marshall Sanitarium since 1880 and attending surgeon at the Watervliet Arsenal since 1870.

Dr. Bontecou contributed much to medical literature and with an authority gained of painstaking research and rare and wide opportunities

for practical experience. Many notable surgical operations of the present day were originated by Dr. Bontecou, especially operations in military surgery. He originated and practiced the application of photography to military surgical history, and was one of the largest contributors to the *Surgical History of the War of the Rebellion*, published by the Surgeon-General after the close of the war. He was also a contributor to the Army Medical Museum. The transactions of the American Medical Association in 1876 give a résumé of the operations on the larger joints, frequently referring to Dr. Bontecou as an operator. For many years Dr. Bontecou was President of the Examining Board of Surgeons for Pensions in Troy.

He was President of the Second Regiment, New York Volunteers, Association, which office he had held for several years, and was a charter member of Post John A. Griswold, G. A. R.

Dr. Bontecou was one of the charter members of Mount Zion Lodge, F. and A. M., which was chartered June 13, 1853.

Dr. Bontecou married, in 1849, Miss Susan Northrup of New Haven, Conn. He is survived by his daughter Josephine, wife of J. Lincoln Steffens of New York, and a son, Dr. Reed Brinsmade Bontecou, who has been associated with his father in the practice of their profession in Troy since 1889, when he was graduated from the College of Physicians and Surgeons in New York City.

GEORGE HENRY VAN WAGNER, M. D.

Dr. George Henry Van Wagner, A. M. C., Class of 1881, a prominent and public-spirited resident of Wappingers Falls, N. Y., died on Tuesday, March 19, 1907, after several months' illness, the result of an intracranial tumor.

He was born at Lloyd, Ulster county, in 1851, of Holland parentage. His early life was passed on a farm, he attending the public schools, later the old Dutchess Academy and the Amenia Seminary. Completing his education he taught school for some time, later publishing a newspaper. In 1881 he was graduated from the Albany Medical College, and, after practicing successfully in the central part of the State for five years, located in Wappingers Falls, where he soon built up a large practice.

Dr. Van Wagner was at one time president of the Dutchess County Medical Society and for many years Health Officer of the towns of Poughkeepsie and Wappingers Falls. As a physician and friend he was held in the highest esteem by the entire community, which now mourns his loss.

WILLIAM E. GARLICK.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS

Text-Book of Psychiatry. A Psychological Study of Insanity for Practitioners and Students. By DR. E. MENDEL, A. O. Professor in the University of Berlin. Authorized Translation. Edited and enlarged by WILLIAM C. KRAUSS, M. D., Buffalo, N. Y., President Board of Managers, Buffalo State Hospital for Insane; Medical Superintendent, Providence Retreat for Insane; Neurologist to Buffalo General, Erie County, German, Emergency Hospitals, etc.; Member of the American Neurological Association. 311 pages. Crown octavo. Extra cloth, \$2.00, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

The book is a small one (302 pages) evidently intended as a manual for students. It is divided almost equally into two parts; the first dealing with "General Psychiatry" (which is further subdivided into three sections; one on "General Symptomatology," another on "The Etiology of Mental Diseases," a third on "Outbreak, Course, Duration, Result of Psychoses") and the second with "Special Psychiatry."

As a compendium for the beginner—for him who seeks a brief, clear statement of the general principles of psychology and psychiatry—the first portion of this book is ideal. In about 150 pages he will find the framework for a structure of knowledge to be completed and perfected at his leisure. It is easy to sneer at a book which attempts to present in the space of five pages a comprehensive survey of the normal mind, but it must not be forgotten that every mature psychologist began his studies and laid the foundation for later acquisitions by forming a conception—crude and didactic as it was later found to be—of such artificial divisions of mind as are commonly established by the terms, perception, ideation, thought, judgment, memory, feeling, emotion, sentiment, attention, reflection and consciousness. Most of us have had to stumble wearily through pages of—for us—unintelligible reading to obtain even the most primitive notion of what is meant by these words. Once having obtained a foothold in the psychologic realm by hewing out for ourselves these rough niches in the blank and forbidding rocky wall it was comparatively easy to clamber to heights giving truer perspective and greater distances. All the more remarkable and praiseworthy is it, therefore, that one who has already climbed high should again descend to the foot of the cliff and with so few masterly strokes block out a passable way to the timid and inexperienced wayfarer longing for a resting-place.

It must not be forgotten that law and society demand of us all that we shall become masters before we may be pupils and that examinations and a diploma form the required passports to the school of real learning. All honor then to the quiz-compend, the dictionary and the syllabus which hasten and facilitate access to the shelves of the special library with its advanced works and complete studies. There is no question but that this first part of Professor Mendel's little volume will greatly aid the student in acquiring his working knowledge of the normal mind, with its dis-

turbances and defects, and should therefore be recommended to those for whom it was intended, namely, the medical students.

When, however, we come to a consideration of that portion of the book which deals with special psychiatry, we are left with grave doubts as to the utility—even to the beginner—of such matter and form of presentation as that chosen by the author. To criticize any one scheme of classification adopted by a writer is difficult because it is hard to suggest another scheme not also open to the same objections, and especially since it must be admitted that all methods of nosographic definition, analysis and description thus far employed have been found insufficient, incomplete, arbitrary, artificial and at last unsatisfactory. To complain that this or that form has been omitted from the list of so-called psychoses, that dementia praecox or psychasthenia or some other familiar term has received no mention and that forms have been retained which are already, or should be, obsolete is to make one's self liable to the charge of being a devotee of this, that or the other school of psychiatry and therefore unfairly biased in opinion and unfit to pass an unprejudiced judgment upon the merits of the classification used. Moreover, the critic may fail to accord the author the credit of knowing the limitations and imperfections of his own scheme and may likewise ignore the motive which prompts him to use this scheme despite its recognized faults.

To those who have been privileged to hear the introductory lecture which Professor Mendel is wont to deliver to his students in psychiatry in Berlin, there can be no doubt as to the chief consideration which influences this teacher in his use of the nomenclature adopted in his *Text-Book of Psychiatry*: that consideration is *Simplicity*. "Why become discouraged over the intricacies of classification?" he is wont to say, "there are the congenital defects, idiocy and imbecility, then there are a number of functional psychoses; namely, delirium hallucinatorium, mania, melancholia, circular psychosis, paranoia and acute dementia; there are the psychoses arising from central neuroses; *i. e.*, the epileptic, hysteric and choreic psychoses, the psychoses of intoxication and those of organic disease of the brain. *Voilà!* learn to recognize a few subdivisions of these principal groups and you have a working psychiatric classification."

In the preface to his book he says, "Although the author's division of the psychoses may not be wholly free from objection, and like all other groupings of the psychoses heretofore made, may lack a characteristic or unique principle of classification, it will, if followed, enable the physician to make a diagnosis in the great majority of cases, and thus to gain more extended understanding of the clinical significance of isolated cases will not be difficult."

"*To make a diagnosis.*" In these simple words is to be found the commonest and most fatal pitfall of the psychiatrist, "for," he argues, "we must assuredly diagnose before we can treat understandingly." True enough; but that which is usually held in mind by those who demand a diagnosis is a name rather than a state. Unable to free himself from the traditions of preconceptions of general medicine, the psychiatrist seeks to name a whole series of mental diseases and conditions before it has been established that such detached and concrete pathological entities ever exist, or come to pass in the devolutions of the human mind. It is not at

all certain, therefore, that it is expedient for the young psychiatrist to be able glibly to make a text-book diagnosis. To observe, to note and to understand the phenomena to which the disordered mind gives expression is the proper primary aim of the alienist, be he young or old, experienced or inexperienced; to be able to catalogue patients arbitrarily according to artificial conceptions of disease-forms is unimportant and often vicious. Whoever has observed and studied many patients with mental disturbance must know—if he be honest with himself—that it is seldom possible to distinguish the four stages of mania described by Professor Mendel. To read his description of mania with its *initial stage*, *stage of exaltation*, *stage of frenzy* and *stage of decline*, one might gain the impression that, like typhoid fever, a typical course with sharply demarcated onset, stages and termination was to be recognized in the condition known as mania. Starting out with such conceptions and abandoned to his own resources in a psychiatric ward, the student would soon find himself all but hopelessly confused and chagrined at his inability to recognize the text-book pictures. The maniac of to-day is the melancholiac of to-morrow and vice versa, while the duration of attacks varies from days to years according to no known law.

The student who follows Mendel will talk of acute dementia with its eighty per cent. of recoveries and will, perhaps, wonder that he is regarded wonderingly and pityingly by brother psychiatrists who understand the word "dementia" itself to indicate a permanent and incurable mental defect and hold "curable dementia" to be a contradiction in terms.

Without upholding any of the more modern classifications and without exercising any of that supercilious impatience with older teaching which the younger generation too often exhibit, it seems fair to claim that the classification of Mendel is really a dead letter. The second half of his book lays down hard and fast theoretical division lines not demonstrable in practice and gives descriptions not in accordance with clinical experience. It fosters conceptions of mental disturbance and defect commonly held some years ago and from which some of our older confrères complain that they would gladly free their minds but unhappily are not able to do so. The very simplicity of presentation at which Professor Mendel aims, defeats its own purpose by being too simple. It is as though we should attempt to teach our children writing by carrying them first through all the crude picture and sign languages of prehistoric peoples before making them familiar with modern graphic symbols. Perhaps it is not as easy to learn to write as it was in the beginning and diagnosis of mental disease is certainly not so simple as in the days when mania and melancholia embraced so large a percentage of the cases under observation. The psychiatric alphabet of Mendel has outlived its usefulness and is not to be recommended for students. For the beginner a book should be chosen which emphasizes, not the importance of applying a name to the patient's malady, but one which demonstrates the absolute necessity for painstaking observation, active investigation and an accurate record of that which is seen. If ever a satisfactory nomenclature is obtained it will be only by the employment of methods aimed first toward the acquirement of an understanding of the patient's condition and secondarily, toward a psychiatric christening.

WM. MC DONALD, JR.

A Text-Book of the Practice of Medicine. For Students and Practitioners.

By HOBART AMORY HARE, M. D., B. Sc., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital; Laureate of the Royal Academy of Medicine in Belgium and of the Medical Society of London. Author of *A Text-Book of Practical Therapeutics*; *A Text-Book of Practical Diagnosis*, etc. In one very handsome octavo volume of 1,120 pages, with 131 engravings and 11 full-page plates in colors and monochrome. Second edition, revised and enlarged. Cloth, \$5.00, net; leather, \$6.00, net; half morocco, \$6.50, net. Lea Brothers & Co., Philadelphia and New York, 1907.

It is but little more than two years ago that the first edition of Dr. Hare's "Practice" was published, but so great has been the demand for it that he has been encouraged to thoroughly revise and bring up to date a second edition. There are several points about this work that at once attract the reader's attention. Nowhere in the book does he find views which are as yet to be proved clinically correct, receiving attention, but invariably where experience has shown old methods or views to be faulty the new and correct idea is thoroughly discussed at length and the reasons for its being are clearly given. As might be expected in a book written by a therapist of Dr. Hare's wide experience, much more prominence is given to methods of treatment than is usual in text-books on the practice of medicine, a fact that will make it of more than ordinary value to the busy practitioner. Those portions which deal with tropical diseases and their sequelæ are the most clear and practical of any articles yet written on that subject and they alone would make the book almost a necessity. The illustrations are many and unusually good, and while there may be works on the subject as good, there are certainly none better.

SPENCER L. DAWES.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery and the Specialties. Edited by A. O. J. KELLY, M. D. Philadelphia: J. B. Lippincott Company. Volume III, Sixteenth Series, 1906.

This volume contains twenty-six articles of a practical and readable character. The following extracts are intended to give a general idea rather than a summary of the volume's contents:

"The Treatment of Acute Pleurisy," by A. A. STEVENS. The writer believes that fully eighty per cent. of cases of fibrinous or serofibrinous pleurisy occurring in adults and usually ascribed to "catching cold" are in reality of tubercular origin. The medical treatment as outlined by the author consists of wet cups or leeches or flaxseed meal poultices for relief of pain and salicylic acid for checking the inflammatory process. He favors aspiration when there is sufficient fluid in the pleural sac to excite severe dyspnea, cyanosis, persistent cough or failing pulse. His favorite site is usually in the sixth or seventh intercostal space between

the midaxillary line and the angle of the scapula. In view of the etiology the after treatment should be the same as that for incipient tuberculosis.

"The Treatment of Dilatation of the Heart," by WILLIAM H. KATZENBACH. The gloomy prognosis which the medical profession are too prone to ascribe to acute dilatation of the heart, Dr. Katzenbach believes is not borne out by facts; when the cases receive proper treatment many respond promptly with an eventual recovery of regularity and strength of heart action. The doctor illustrates his treatment by giving in detail the facts in connection with a case occurring in his private practice; his mainstays are (a) moderate degree of rest; (b) digitalis; (c) fresh air.

"Professor Fournier's Recent Modification of His Treatment of Syphilis," by H. SAINGERY. The following is the plan Fournier now proposes: At the beginning an energetic course, to be kept up methodically for the first two years, in the shape of a series of mercurial treatments alternating with intercalary periods of therapeutic rest. Then stop treatment for two years; and at about the fifth year, carry out another course, of one year's duration, as before. After that, interrupt again for two or three years, advising a third course of one year at about the seventh or eighth year of the disease.

"Life in the Antarctic from a Medical Point of View," by J. H. HARVEY PIRIE. A very interesting article touching upon the following aspects of the subject, *i. e.*, personnel, ship, clothing and sledging, diet, surgery, bacteriology, frost-bite and snow-blindness, medicine, sea-sickness.

"The Hyperemic Treatment of Swollen Joints—with Report of Cases," by E. H. BRADFORD. This article is a contribution to the much discussed Bier method of treatment. The methods used to produce hyperemia are hot air, constriction and suction.

"Hemorrhagic Diathesis Complicating Surgical Work," by FRED K. GRIFFITH. "Is the patient a bleeder?" A question all surgeons should ask before operating a new case—such is the author's opinion. He describes a case in his practice of a child twenty-one months old whom he circumcised; the patient proved to be "bleeder;" a fatal termination was narrowly averted.

H. D. C.

Genito-Urinary Diseases and Syphilis. By HENRY H. MORTON, M. D., Clinical Professor of Genito-Urinary Diseases in the Long Island College Hospital; Genito-Urinary Surgeon to the Long Island and Kings County Hospitals, and the Polhemus Memorial Clinic. Illustrated with 158 Half-tone and Photo-engravings and 7 Full-page Colored Plates. Second Edition, Revised and Enlarged. Royal Octavo, 500 pages. Bound in Extra Cloth. Price, \$4.00, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

Although there are many works upon this subject already available, the book here reviewed must rank among the best. In this, its second edition, the changes and additions have increased its usefulness. It covers

the whole field of genito-urinary disorders, including syphilis, in a very concise and clear manner; the arrangement is excellent. The chapters on gonorrhea contain much that is new in treatment, being for the most part a description of the measures now employed in the clinics of Frank, Wassidlo and Casper in Berlin, representing the most advanced ideas on the management of this important disease.

Hypertrophy of the prostate is well described, and although the author favors the perineal operation for its relief, the other methods are impartially discussed.

Several chapters are given to the technic of urethroscopy, cystoscopy and ureteral catheterization and the scope of their usefulness defined. The various conditions found are clearly pictured.

At the end of the book the formula for the various staining solutions for gonococci, tubercle bacilli and spirochæte pallida are given.

The book is well adapted for the use of general practitioners as well as specialists.

H. W. C.

Materia Medica for Nurses. By EMILY M. A. STONEY, Superintendent of the Training School for Nurses at the Carney Hospital, South Boston, Mass. Beautiful 12mo of 300 pages. Third Edition, Thoroughly Revised. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$1.50, net.

The third edition of this volume has been carefully revised and adapted to the Eighth Decennial Revision of the United States Pharmacopeia. It contains considerable new matter which adds to its value and helps to make it what it is, a practical, concise and useful book for the professional nurse.

SPENCER L. DAWES.

MEDICINE

Edited by Samuel B. Ward, M. D., and Hermon C. Gordinier, M. D.

Dicrotism in Aortic Insufficiency. (Ueber Dikrotie bei Aorten-insuffizienz.)

GOLDSCHIEDER. *Zeitschrift für klinische Medizin*, Band 95, Heft 5 and 6.

The exact mechanism of the normal dicrotism is not positively known; it seems, however, to be the result of the closure of the normal aortic valve.

The author believes it possible that if certain conditions are present dicrotism may accompany aortic insufficiency. He cites three cases of aortic insufficiency in all of which a palpable dicrotic pulse was felt. All three cases had in addition to their aortic incompetency, mitral regurgitation and in two of the cases double valvular lesions were found at the autopsies. The first case was a male aged sixteen years, who sickened in December, 1905, with pain in the throat, swelling of the feet and dyspnea.

When admitted there was fever, aortic insufficiency, double pleurisy, dry pericarditis, enlargement of the liver and spleen. Pulse was 108, celer. Capillary and retinal pulsation was present. Great enlargement of the left ventricle. In addition to the aortic regurgitant murmur, a clear systolic apex murmur developed. Soon afterward very distinct dicrotism was discovered in the pulse which was also very evident in the sphygmogram. The two other cases were clinically almost identical with the first.

Both began with rheumatic fever. One developed pericarditis, the other endocarditis; both had on entrance to the hospital aortic regurgitation and developed while in the hospital mitral regurgitation. Coincident with the development of the latter typical dicrotism occurred both at the wrist and in the sphygmograms.

The author believes the dicrotism in aortic regurgitation is to be explained by the presence of mitral insufficiency in the following manner: Namely, that during systole owing to the large amount of blood previously in the left ventricle the result of the aortic lesion, the left auricle is greatly overfilled and distended. And at the beginning of diastole this over-distended left auricle discharges an unusual amount of blood into the left ventricle, which, meeting with such resistance, the regurgitant stream coming from the aorta, a reflex wave is thereby excited exactly as occurs with the intact aortic valve, thus occasioning the dicrotism.

Dicrotism in Aortic Insufficiency. (Ueber die Dikrotie bei Aorteninsuffizienz.)

W. JANOWSKI. *Zeitschrift für klinische Medicin*, Band 106, p. 121.

The characteristic pulse for aortic insufficiency is the pulsus celer, a strong pulse with quick widening of the arteries due to a large pulse wave, followed by a sudden collapse of the arterial wall. The author states that the one question which confronts us is whether the presence of dicrotism with distinct evidence of the tidal wave "rückstoss elevation" in the sphygmographic tracings may occur in a case of pure aortic regurgitation. Dicrotism usually occurs when the arterial wall is, owing to low arterial pressure, insufficiently expanded. It occurs most commonly in acute infectious fevers, ruptured compensation, disease of the vaso motor apparatus, as in Morbus Basedowii, and lastly with poisoning by vaso-dilutants, such as amyl nitrite, etc. As any of the above-mentioned causative factors may occur with aortic regurgitation, so may the pulse become dicrotic and lose its typical celer quality. Such dicrotism does not preclude the diagnosis of pure aortic regurgitation. Recently Goldscheider has observed three cases of aortic insufficiency with fever and dicrotism. In each of his cases a double valvular lesion existed, namely, aortic and mitral insufficiency. In two of these cases the double valvular defect was proven by autopsies; hence he explains the dicrotism by the presence of mitral regurgitation and states that dicrotism with aortic regurgitation is diagnostic of the presence of mitral regurgitation.

Geigel observed a girl twenty years of age with aortic insufficiency, who, after a sore throat, developed an endocarditis of the mitral area, followed by a mitral systolic murmur with accentuation of the pulmonic second sound. The volume of the pulse immediately changed, becoming smaller and typically dicrotic. Three weeks afterward the symptoms of mitral insufficiency disappeared, and then the typical pulsus celer without dicrotism returned. Geigel believes that the mitral insufficiency produces dicrotism by diminishing the expansion of the arterial walls, with, as a result, the return of the predicrotic and dicrotic waves. The author on the other hand, from the study of a large number of cases, does not believe the dicrotism per se to be due to the oncoming or coexistence of mitral regurgitation relative or organic. In proof of this assertion he describes four pulse tracings from cases of aortic and mitral regurgitation without fever, showing no evidence of dicrotism. The author also states that when individuals suffering from the above-mentioned valvular defects have superadded acute febrile disturbances, dicrotism immediately comes on, together with a return of the predicrotic or tidal wave. He shows numerous sphygmograms in verification of this point. The author cites a case of aortic regurgitation with febrile reaction due to an acute endocarditis with dicrotism and still another more interesting one of the same valvular defect with pneumonia and pericarditis sicca with typical dicrotism and change in volume of the pulse, which, after the temperature disappeared, lost its dicrotism and assumed its celer quality.

The author believes first that the cause of dicrotism in aortic regurgitation is not due to the oncoming or association of mitral regurgitation.

Second, that it may be due to febrile reactions; to ruptured compensation; or to poisoning by vaso motor dilatants.

Paravertebral Triangle of Dullness in Pleural Effusion (Grocco's Sign).

W. S. THAYER and MARSHAL FABYAN. *The American Journal of the Medical Sciences*, January, 1907.

In March, 1902, Grocco described in the following words a new physical sign which he had observed in pleural effusion. Paravertebral triangle of the side opposite that of the pleural effusion. When, with a pleural effusion of sufficient size, one percusses from above downward, along the spinous processes of the vertebra, the patient being in the sitting posture, there appears at the level of the fluid a dullness which, relative at first, becomes absolute as one passes downward, in association with a progressively increasing sense of resistance. In like manner, by percussing downward on the healthy side, along lines parallel to the spinous processes, there is noted, opposite the dullness in the median line, a paravertebral area of deficient resonance, of triangular shape. One side of this dull area is represented by the line of the spinous processes; another, by the lower border of the area of thoracic resonance for a short distance which varies in length from two to three or more centimeters; the outer side is

represented by a line which, starting from the base, rises obliquely to unite at an acute angle with the median line at about the upper limit of dullness.

Thayer and Fabyan from a study of thirty-two cases of pleural effusion come to the following conclusions:

(1) A paravertebral triangle of dullness at the base of the opposite chest was clearly demonstrated in thirty. In one of the remaining cases, an instance of small effusion in which the examination was rather hastily made, but a small, indefinite area of dullness was noted. In the other case the absences of the paravertebral triangle was easily explained by the position of the exudate—an interlobar empyema.

(2) This triangle is an area of relative dullness, the vertical side of which is represented by the line of the apophyses of the vertebrae, the apex reaching a point somewhat above the level of flatness of the effusion; the base is formed by the lower limit of pulmonary resonance on the healthy side for a distance of from two to seven centimeters from the spine; the hypotenuse, by a line connecting these points. This last line shows, sometimes, a slight outward convexity. The dullness is more marked as one approaches the spine.

(3) In the triangular area of dullness the respiratory murmur is often suppressed and of a quality similar to that heard over the effusion. Egophany or a nasal quality of the voice sounds may also be present. The coin sound, when the maneuver is carried out by placing the coin on the front of the chest below the level of the effusion, shows the same metallic ring as that which is observed over the affected side. These signs may be so marked as to make it possible to outline the area of the triangle by auscultation.

(4) When the patient lies on the affected side the triangle of dullness diminishes or disappears, and returns again when the erect posture is assumed, or when the patient lies on the other side.

(5) The triangle is usually larger on the left side—that is, in the case of right-sided effusions—than on the right.

(6) In three cases of encapsulated effusion the presence of a paravertebral triangle of dullness on the opposite side proved of real diagnostic assistance.

(7) Our experience justifies the conclusion that the paravertebral triangle of dullness is a remarkably constant and characteristic sign of fluid in the pleural cavity. It further supports the assertion of the discoverer that it may be of particular value in the case of encapsulated effusions. We regard the sign as an important addition to our means of diagnosis of effusions in the pleural cavity.

(8) As to its cause, we are inclined to accept the explanation offered by Baduel and Siciliano, namely, that the fluid, lying against and passing anteriorly over the bodies of the vertebrae, acts as a mute in suppressing the sonorous vibrations of the spine. This deadening of the resonance is naturally appreciable for a certain distance beyond the median line over the area occupied by the transverse processes and the first part of

the ribs. It is more marked and extends over a wider area at the base, where the fluid, collecting in the sinus of the pleura, comes into wider contact with the vertebrae and pushes farther around toward the opposite side. The displacement of the contents of the mediastinum—aorta, esophagus, asygos, vein, heart—may play a part, especially in effusion on the right side of the chest, in producing this dullness as well as in bringing about a certain degree of compression of the lung on the opposite side.

(9) Although there may be a small strip of dullness along the spine on the side opposite a pneumonia, we have but once detected anything approaching a paravertebral triangle. In this instance the dullness was not very definite and showed little or no change on change of position.

Outlining of the Heart by Percussion. (Zur Frage der perkutorischen Darstellung der gesamten Vorderfläche des Herzens.)

F. MORITZ. *Deutsche Archiv für klinische Medizin*, 1906, LXXXVIII, 276.

Various observers using different technique give the boundaries of the heart by percussion differently. The author represents in a chart the actual boundaries of the heart of a young man of twenty-four, obtained by orthodiagram and also in dotted lines normal boundaries as given by eight different text-books. The author has used orthodiagraphy (determination of the heart boundaries by the X-ray) but does not use it to the exclusion of percussion. He has perfected a method of percussion whose results respond with X-ray determinations. To determine the right border of the heart he uses heavy percussion—being rather hard, short blows—and the finger as a pleximeter. The right border of the heart is reached just before one comes to the edge of the sternum. The determination of the right border of the heart is made easier if, after a deep inspiration, there follows a forced expiration. Percussion is performed while the patient holds his breath after this forced expiration.

A different method is pursued in determining the left border of the heart. The test is not made during expiration because the left side of the heart, and especially the apex, is moved outward and upward from its normal position. The results of percussion where the chest wall begins to slope toward the sides are not as reliable as over the anterior surface. The more the heart extends to the left into this region where the thorax is curved, the lighter should be the percussion. If heavy percussion is used on the left side of the chest beyond the point of beginning curvature, dullness may be obtained beyond the true heart dullness. The upper border of the heart is obtained by heavy percussion. If the chest wall is thick these considerations are of even more moment. In short people there is danger of getting the heart boundary too far to the left.

Foldschender reports good results with the lightest possible, barely perceptible "schoellen" percussion and Ebstein with Tast percussion. These methods, however, have not been sufficiently controlled by orthodiagraphic work. The author is well satisfied with his method for clinical cases. For scientific work, however, the X-ray determination is the best.

ALBANY MEDICAL ANNALS

Original Communications

GASTRIC ULCER.

Read before the Medical Society of the County of Albany, April 10, 1907.

By A. JACOBI, M.D., LL.D.,

New York.

Ulcers of the stomach, both acute and chronic, are frequent at every age. There are those whose experience permits them to say that from two to five per cent. of the population suffer from it (Ewald). Brinton collected 226 cases, of which two were under ten years of age; eighteen from ten to twenty; forty-three from twenty to thirty; thirty-eight from thirty to forty; thirty-eight from forty to fifty; thirty-two from fifty to sixty; and thirty-two from sixty to seventy. Similar results are obtained by Cruveilhier and by Rokitansky, who was the first to give an accurate description of the condition.

A late case has been published by Immerwohl (*Archiv. f. Kind.*, Vol. 43, p. 321, 1906). The patient was four years old, had a chronic ulcer and nephritis, and died of uremia.

These figures do not cover the case at all. Ulcer of the stomach, and the most dangerous form at that, is not infrequent in the infant. Between the seventh and the thirteenth year it is not at all rare. Fatal hemorrhage, the so-called melaena of the newly-born, has been seen by most of you. Of Collins' 279 ulcer cases, seven occurred in the first year; forty-two below the tenth. The causes may be various. Prenatal defect in the wall of the stomach accounts for very few only. Thrombosis of the umbilical vein and embolism of small vessels, some of them depending on congenital affections of the heart, explain many. Local injuries by swallowed bones, needles and caustics, now and then hot food, give rise to the most acute forms with fatal or nearly fatal results. In advanced years it is chronic gastric

catarrh that leads to the vast majority of cases. It is these that you mostly see. To the Festschrift dedicated to me seven years ago when I was younger, on the completion of my seventieth year, Kinnicutt contributed an article in which he spoke of the causation of gastric and duodenal ulcer by burns and by septicemia, particularly in those instances which are complicated with nephritis, the frequency of which is mostly found at the two termini of life—*viz.*, soon after birth and in old age.

In connection with that statement, it will perhaps interest some of my hearers to be reminded that exactly eleven years ago, in the *New York Medical Journal*, I directed the attention of the medical public to the large number of cases of nephritis in the newly-born, and that not a few discoverers of the last few years, whose literary knowledge does not antedate the year in which they are writing, have come to the conclusion that the very young infant is forward enough now and then to indulge in nephritis.

The living mucous membrane of the stomach is very liable to swell rapidly and extensively. An acute gastric catarrh raises the membrane in folds which adjoin and compress each other, similar to what may be observed in the lower part of the rectum, though its varicosities may not amount to what is called hemorrhoids. In these folds small fissures or ulcerations are often found as the results of the mutual pressure of the softened surfaces which are deprived of their epithelium. The stomach and intestine are very amenable to all sorts of detrimental influences. I remind you of the gastric and intestinal ulcerations caused by corrosive sublimate, arsenic, and baryum salts, though they be administered under the skin, and of the influence of the toxins of nephritis just mentioned.

Disorders of the circulation, mainly heart disease—both endocardial and myocardial, also arteriosclerosis, fatty degeneration of the intima, and hyaline degenerations of the arteries—conditions which are found in the vessels of the stomach as well as in the rest of the body—causing indigestion and fermentation quite frequently before actual heart diseases are diagnosticable—may cause ulcer in advanced life. So do cerebral or peripheral lesions of the nervous system. Van Yzeren (*Z. f. Klin. Med.*, Vol. 43) noticed ulcer of the stomach as the result of a section below the diaphragm of the pneumogastric nerve, and explained it by a spasm causing anemia.

Ophüls (*Jour. of Exper. Med.*, Vol. viii, p. 182) made the

same observation, but does not charge the origin of ulcer to any trophic influences of the pneumogastric, which are denied, but to the lowering of the motility of the stomach which is dilated by food pressure. Indeed, many clinicians like Ad. Schmidt believe that motor disturbances are at least as important causative forces as disorders of secretion or direct injuries. Defects in the epithelium amounting to slight wounds must occur very frequently in the healthy stomach, but the normal mucous membrane covers a slight wound at once and excludes the gastric acid; only in atonic and anemic conditions of young women such a rapid recovery would not take place and the recent wound not heal.

Von Yzeren, whom I have mentioned, suggests also the possibility of explaining the gastric ulcer by a trophic influence of the pneumogastric nerve on the gastric mucous membrane, and alludes to the frequency of ulcer in the same family which may point to abnormal innervation. Similarly Dalla Vedova (*Arch. d. Verdauungs K. viii*) caused gastric ulcer by the irritation and section of the coeliac plexus, which moreover contains pneumogastric fibres, and claims it as a trophoneurosis like a mal perforant. This experimental fact explains the fact that there are families in which there appears to be an hereditary tendency to gastric ulcer. This hereditary influence does not appear to be widely known or appreciated, but Rüttimeyer has given it prominence in a book published in 1906 on "The Geographical Distribution and the Diagnosis of Gastric Ulcer;" and Armin Huber in a paper on the same subject published in the *Münchener med. Woch.* of January 29, 1907.

It would be a grave mistake, however, to exclude all the other etiologic factors. Huber makes that mistake. Indeed the disturbances of the complicated physiology of an organism (that means an organic disease) has more, and more complicated, causes than an infectious disease whose main or only cause is a microbe.

All such cases are liable to be very obstinate and to show a predilection for certain areas. It is principally the neighborhood of the cardia, and next to it that of the pylorus, in which an ulcer, single or multiple, is located. It is the latter, the ulcer near the pylorus, that may result in the thickening of the surrounding tissue. It may amount to a tumor which is sometimes diagnosticable, mostly on the left side, though it do not amount to a malignant degeneration. I may be permitted to add here that

carcinoma will sometimes develop out of and near an ulceration, or from its cicatrix—though the assertion that gastric ulcer will develop into carcinoma in as many as three per cent. of the cases is an exaggeration. From what I shall have to say you will easily concur with me when you consider that such statements are apt to come from those whose horizon is influenced by the fact that they count their cases by the results of their autopsies, both on the living and the dead.

Most ulcers are found on the posterior wall near or in the small curvature; the next locality of predilection is the neighborhood of the pylorus. Some are found near the cardia and in the fundus, in the anterior wall and the large curvature. When ulcers are in the duodenum and the pylorus they may merge and cause a gastro-duodenal fistula. Recent ulcers and old cicatrices may be met with together. The size may be no larger than the head of a pin and then detected with difficulty at the autopsy; there are, however, those of the size of the hand. Secondary peritonitis, duodenitis, abscesses in the wall of the stomach, in the liver, and perforations into the peritoneal cavity, the liver, the spleen, the subphrenic space, and the pleural cavity may occur. The locality and the size of a cicatrix may give rise to changes in the shape of the stomach. Beside dilatation and muscular hypertrophy which results from ulcers near the pylorus terminating in stenosis, the center of the organ may contract and form a bilobular stomach, or hour-glass constriction.*

Or the small curvature may contract so that cardia and pylorus approach one another; or diverticula may occur. (E. Kaufmann, *Path. Anat.* 3 Ed., p. 389.)

Hemorrhage. Brinton, Gerhardt, and Welch believe it occurs in from three to five per cent. of all cases; Müller, in ten per cent.; Leube, in less than one per cent. This latter statement corresponds with my own observation, which extends over fifty-four years of private and hospital practice in New York. Blood may be vomited or passed down. Hemoglobin will easily be changed into hematin. That is what changes the color. When there is much acid in the stomach, coagula will be brought up. The acid and the presence of gases in the gut give it the tar

* In this connection—the hour-glass constriction of the stomach—of an ante-natal kind, probably also the result of an inflammatory process—may be mentioned. There is a case of J. H. Musser, (*Phil. Med. Times* xiv. 331, 1883) Dwight, (*Amer. Jour. Med. Science*, vol. 126, 581, 1903) K. Sievers (*Berl. M. W.* 36. 325, 1899)—Possibly, however, such a case means nothing but an atavistic return to the condition of some animals (Ballantyne II, p. 533, Ante-natal pathology).

color we meet in the stools. Slight hemorrhages may take place for weeks and months, without vomiting. Small quantities of black blood may be found in the feces, sometimes daily. Their presence must be suspected when persons suffering from gastric symptoms become thoroughly anemic. Still, in such cases great caution should prevail, for menstruation or swallowed meat particles, or slight extravasation—mostly red, however—from rectal varicosities may simulate occult gastric bleeding. Besides, there may be extravasations from varicosities of the esophagus, from slight hemorrhagic erosions, or from disturbances of the portal circulation. And it should be borne in mind that the presence of hemoglobin and red blood-cells by themselves in the masses brought up by vomiting or evacuated from the rectum prove nothing at all. Unobserved bleeding from the gums or the posterior nares or the throat, must not be taken for a gastric ulcer. Even in what is called melaena of the newly-born, mistakes may be made. A wise man has written a book lately to explain all the cases of melaena on the strength of one case of vomiting and expelling blood which could be proven to come from the posterior nares.

The detection of blood is sometimes very difficult. The Tinct. guajac and turpentine test teaches the presence of fair quantities of blood only. The arteries from which hemorrhages take place are the coronary—mainly the superior—also the splenic and gastro-intestinal. If it be the coronary, the bleeding may come from both sides. Hemorrhages from a vein, or from an artery *and* a vein at the same time, or from a neighboring vein—for instance, the splenic—are quite rare.

Perforations are grave accidents. Gerhardt, Debove, and Remond claim their occurrence in thirteen; Lebert and Welch in from three to six; and Leube in one and two-tenths per cent. of all their cases. The latter percentage I think to be correct, unless you count the gravest cases only.

Mortality reports vary widely. Leube has two and four-tenths per cent. of his 424 patients. There were recoveries after four to five weeks in seventy-five per cent.; improvements, twenty per cent.; failures, one and five-tenths per cent.; deaths, two and four-tenths per cent.

Let me ask at once what a recovery in four or five weeks may mean, and where is the guarantee of the persistence of his results?

Debove and Remond report fifty per cent. Leube's figures

rise from two and four-tenths to four and one-tenth per cent. in cases of hemorrhage. Koehler has a mortality of six and four-tenths; Warren of ten; Welch of fifteen; Habershon of eighteen per cent. Warren collated 127 cases; thirty-four per cent. of them attained a complete recovery; there were relapses in forty-three per cent.—indeed, relapses are reported by all authors, and are experienced by Russell and Joslin, and by all of us. He found carcinomatous degenerations in three per cent.; stenosis of the pylorus in ten per cent.; and death from hemorrhage and perforation in ten per cent. Schulz had permanent recoveries in sixty-four per cent.; temporary recoveries in twelve per cent.; and failures and death in twenty-three per cent.

All these figures and many more are collected by Lieblein and Hilgenreiner in the forty-sixth volume of Billroth and Luecke's *Deutsche Chirurgie*, which treats in its 600 pages of the ulcerations and the acquired fistulae of the gastro-intestinal tract.

The vast differences, two and four-tenths per cent. and fifty per cent., prove for the thousandth time that statistics may be the most deceptive and most irrational method of dealing with any clinical question. The experience of the general practitioner in a large practice amongst the poor, or amongst the rich, or amongst men or amongst women; the general physician with a family practice only, or an office practice pre-eminently; the consultant who is called in to see bad cases only; the stomach specialist; the surgeon in general practice; the hospital physician in whose wards bad cases only take refuge; the hospital surgeon who never sees anything but hemorrhages and perforations—what a variety of good observers, but also what a variety of cases, and durations, and causes, and observations. Exclusive hospital physicians and surgeons have no experience with the average ulcer of the stomach—theirs is only an experience of bad or of fatal cases. Their statistics refer to hemorrhages and perforations, but not to chronic ulcer of the stomach, which in almost every case is a disease of slow development, chronic in its nature, amenable to dietetic and drug treatment, part of the domain of the general practitioner and influenced by general therapeutic methods, the last stage of which, in a few cases comparatively, may, or rather will, be an operation. That operation in these few cases should, if possible, be performed by the man who has often done it. I know of a big hospital in which the operation for perforation of the gastro-intestinal tract is frequently per-

formed successfully by the surgeon, unsuccessfully by the adjunct—a significant fact.

The most reliable statistics of chronic ulcer of the stomach could, or should, be established by one hundred or five hundred general practitioners, provided they keep records of their cases. They see them in the beginning, when the symptoms are those of dyspepsia, hyperacidity, and pain only; they see the advanced cases which have been neglected by the factory girl who is compelled to work ten or twelve hours to make a living, by the business man, the mechanic, the working man, also the worst class—the so-called acute cases of hemorrhage or perforation. Collected in large numbers, they give reliable statistical data—but in large numbers only.

The main symptoms of gastric ulcer are pain, hyperacidity, and sometimes hemorrhage.

The *pain* is caused by over-secretion, by undue peristalsis, or by pressure. There are few cases without it. It is almost always local, most intense when the ulcer is in the pyloric region—usually, however, it is found in the median line a little below the ensiform process. Pressure will always elicit it. It is rarely mild, usually marked. An empty stomach is not, as a rule, sensitive spontaneously—that means without pressure. The pain starts at once during eating, and increases during the activity of digestion, and is diagnosticated from a neurotic pain by (in the latter) the sensitiveness of the empty stomach, which is relieved by eating. Gastric neurosis is relieved by frequent though small meals.

The pain of gastric ulcer is often transmitted to the back, not opposite to the precordial region only, but also to the dorsal area and apparently to the lungs, also to the region of the deltoid and the inner aspect of the humerus. When it has healed, it is no longer painful; cicatrices are not sensitive. It should not be forgotten, however, that pain does not always mean ulcer, but that many a pain of seeming gastric ulcer may be called forth by a cold temperature (ice water or atmosphere), or by emotions. Usually, however, it is a meal that provokes it. A pain which arises regularly from two to four hours after a meal should be referred to the colon, which then is in a condition of chronic inflammation and often dilatation, and exhibits obstinate constipation. Pain arising half an hour after eating is due to duodenal ulceration or to peritonitic adhesions.

Hyperacidity. In its normal condition the gastric secretion has twenty-five one-hundredths ($\frac{1}{4}$) per cent. of hydrochloric acid. It has no injurious influence on the living tissue, which contains in its living blood-vessel circulation a sufficient quantity of alkali. When tissue is broken down, however, that means ulcerates, the vital equilibrium between alkali and acid is disturbed, and the presence of even the normal quantity of gastric acid adds to the lesion.* That takes place in the normal condition of the gastric secretion. But during the presence of an ulcer—mainly when near the pylorus with consecutive functional or organic stenosis, the acid rises to three-tenths or five-tenths, or even six-tenths of one per cent. In uncomplicated gastric ulcer there is no lactic acid. In this respect it differs from carcinoma—which has almost always lactic and usually no hydrochloric acid. This reduction, or absence, is more frequent in cancer than in any other disease. The reduction is noticed in one-third, the absence in two-thirds of the cases, no matter in what part of the stomach the malignant change may occur. (Benj. Moore, Liverpool, *Proc. Royal Soc.*, 1905, vol. 76; *Biochem Jour.* 1906, I. p. 274; W. M. Palmer *Biorchen*, Jour. I. 398.) The blood appears to contain less free hydrogen ions for the gastric cells to secrete in the form of free acid. It has also been observed that in cancer the alkalinity of the inorganic constituents of the plasma is increased. Exceptional cases, however, tell a different story. A few weeks ago Dr. Willy Meyer exhibited a specimen of pyloric and gastric ulcer of large size, taken from a patient whose examination before the operation yielded absolutely no lactic but large amounts of hydrochloric acid in the gastric secretion. This hyperacidity, however, may be entirely absent—there may be anacidity. The latter condition may accompany cases of dilatation of the stomach which depend on consecutive stricture of the pylorus.

As long as there is the usual form of gastric ulcer and when no decomposition of the gastric contents takes place, digestion is possible, sometimes even normal. Secretin is formed by the action of hydrochloric acid on the mucous membrane of the duodenum. Even without secretin, in cases of achylia gastrica the trypsin of the pancreas digests proteids in an alkaline sur-

* The same destruction may take place after death when the circulation is gone and the acid is still present. In that condition, the so-called gastro-malacia—the softening of the stomach—is frequently observed. Until Elsaesser's time, 1848, it was considered a disease of the living. It was he who explained it by the corrosion of the dead tissue by the still present acid.

rounding—like pepsine in an acid. After a while, however, the digestion is, or may become, impaired on account of motory incompetency, or of acetic, butyric, caprylic, and all sorts of fat acids accompanying the hydrochloric. Together they give rise to sour eructations which either begin with eating or follow the meal for an indefinite time, and annoy the patient sometimes all day. Attacks of sour vomiting will be observed during a meal or within one or two hours afterward.*

Hyperacidity is not a constant accompaniment of gastric ulcer, but as a rule it must be looked for. In cases of chlorosis it is common; in them the alkalinity of the blood is diminished. Acid exerts its local influence when it meets with an occasional lesion, mostly traumatic, of the gastric mucous membrane—mainly when the latter is in a condition of ill-nutrition or atrophy. I may repeat here that the acid found is not invariably, as Ewald asserted, hydrochloric, but often a fat acid. R. F. Chase (*Boston Med. Jour. No. 2, 1907*) thinks that such an occurrence indicates a change of treatment. It does not.

Complicating symptoms have been enumerated.

Glucose. It has no direct connection with gastric ulcer, but with a complication of pancreatic disease.

The leucocytosis of digestion is always absent in carcinoma of the stomach, but it may also be absent in gastric ulcer. Blood examinations are of no account for the differentiation between ulcer and carcinoma.

Spasm of the pylorus is noticed only when the ulceration is in close proximity to it.

Splenitis has been observed by Gerhardt.

The urine is often scanty, of high specific gravity, and may contain diacetic acid and aceton. An ominous symptom is its alkalinity and the absence of sodium chlorid, provided that alkalinity be not the result of medication.

The diagnosis may become difficult or complicated by the secondary appearance of chronic or subacute peritonitis and adhesions.

What I have said of the influence of the gastric acid on the causation and perpetuation of gastric ulcer, teaches the indication for treatment.

*Both pain and vomiting repeated and persistent for months may be occasioned by the local pressure exerted by a floating right kidney. This is important to remember for the purposes of a differential diagnosis.

Absolute rest in bed from two to three weeks in acute cases should be a prerequisite. But the large majority of patients are young, ill-fed, sometimes chlorotic—working women, who will apply to you only after they have suffered months or years. Here is your difficulty, as it has been mine in hundreds of cases, and here, quite frequently, the cause of the gravity of the prognosis.

The moderation of heart diseases and the combating of a chronic gastric catarrh act as preventives. The presence of ulcer requires constant alkalization of the stomach. I say the constant alkalization, for the administration of an alkali at long intervals is insufficient. I give an alkali before every meal, and at intervals of two hours—not for weeks but for months, in sufficient quantities. Boas, an authority on many questions relating to the stomach, found that the presence of gastric juice with its three per mille of hydrochloric acid, requires twelve grammes (3 iii) of sodium bicarbonate for neutralization. That is why lime water which contains only one part of lime in 780 parts of water has hardly any claim as a neutralizing alkali. The two hundred cubic centimeters of aq. calcis recommended by Norbert Ortner contain twenty-five centigrammes (equals four grains) of calcium.

Which alkali should be preferred? As a rule, those which contain no carbonic acid. Carbonic acid inflates the stomach and does it suddenly—a dangerous result in the imminence or presence of a hemorrhage, and increases peristalsis. That is why sodium bicarbonate, and even calcium carbonate, should be avoided. But it is not always possible to do so. The best is calcined magnesia, magnesium oxid. Three to four grammes are easily taken day after day without causing diarrhea; some may take more daily in (refracted) two-hourly doses. When more alkali is required, the addition of prepared chalk cannot be avoided. Calcium phosphate *may* take its place, but is not an equivalent. Bismuthus subcarbonate—not *subnitrate*—on account of its crystalline gritty condition, may safely and efficiently be added in a daily quantity of from two to ten grammes. One of its accessory effects is the suppression of diarrhea. Magnesium oxid is clinically analogous to calcium oxid, but is not caustic because it is almost insoluble in water. As it is readily dissolved in acids, it neutralizes them in poisoning cases better than the carbonates of calcium or magnesium, the calcium dioxid

of which when rapidly developed will annoy the stomach or diaphragm and cause peristalsis. The oxid of magnesium should be given suspended in from 100 to 200 parts of water. If too little water be used, magnesium hydrate may stiffen into a gelatinous hard mass; even intestinal conglomerates may form, consisting of ammonio-magnesium phosphate.

Diarrhea should be avoided, and the daily dose of magnesium oxid must be guided by the purgative effect its administration will or may exhibit. The danger of diarrhea forbids the use of calomel; the Carlsbad water or salts which have been urged as frequent indications should be given with a great deal of mental reservation.

Bismuth is not absorbed by the intact mucous membrane. When this is deprived of its epithelium, bismuth may lead to central convulsions and local inflammation, like that caused by mercury, of the organs of elimination. Nephritis, stomatitis, and colitis have been observed. Large doses which do not meet a sufficient amount of sulphid of hydrogen may be expelled through the rectum unchanged.

Anesthesin and orthoform have been recommended in place of other bismuth preparations. They benefit the manufacturers if nobody else.

Excessive peristalsis must be avoided both in mild and bad cases. The equivalent of from ten to fifteen milligrammes of opium to every powder (opium, extract of opium, codein, morphin) relieves pain and reduces peristalsis. Opium, however, is said by some to increase the secretion of acid. I have not been able to convince myself of that effect. In its place and for its alleged effect of relieving acid atropin 0.001 has been used subcutaneously once or three times a day. Both the administration and the dose have their inconveniences. Belladonna, the herb or the extract, has been given internally in doses of 0.03 several times daily. There are very few patients, however, who tolerate 0.1 of extract of belladonna for days in succession. As a rule, four or six centigrammes in successive days is all that can conveniently be given to adults. Children and infants tolerate large quantities in proportion.

Chloral must not be tried as a substitute for an opiate. It is a local irritant. I emphasize that because I have met with the advice to use it.

Very severe pain may require an occasional subcutaneous

administration of morphin. In many cases it may be overcome by hot applications, either dry or moist; in many more, by obliging the patient to swallow a big dose of calcined magnesia, with or without bismuth, and lie on his face and belly in order to facilitate the contact of the alkali with the sore and sensitive surface. When the ulcer is near the pylorus, the posture on the right side may be preferred. It is rational to recommend a gradual change from one position to another. With chloroform water given in this condition, I have no acquaintance; it has been recommended in doses of from 150 to 200 cubic centimeters. Six ounces, however, is a rather big dose for that kind of stomach. When a severe pain has been attributed to spasm of the pylorus, some ounces of olive oil have been administered. I prefer alkaline and narcotic treatment.

To avoid peristalsis, no food must be cold, and the powders must be taken in warm or hot water.

The treatment must be continued for a long time—not weeks but months; no matter whether the case presents itself in an acute form or, as usual, in its slow development from an acute or chronic gastric catarrh. The alkaline and cautious dietary treatment will keep the operating specialist comparatively idle, but should follow operative procedures as well. Magnesia will be borne by the mucous membrane better than the normal acid—after operations also. An open ulcer or a mere sore, when exposed to the normal acid of the stomach will get worse and may perforate. Bismuth alone is insufficient.

In hemorrhage or perforation absolute rest must be enforced. Both require morphine subcutaneously. Adrenalin internally was never of any use in my experience. Give it under the skin, it acts better than ergot. In bad cases it is worth while to try the effect of ligating the venous circulation of the lower extremities as you do in pulmonary hemorrhages. Lead has served me badly. Two hundred cubic centimeters of a five or ten per cent. solution of gelatine have been recommended. One objection to the dose would be its bulk.

Ice bags are indispensable in hemorrhages. Subcutaneous saline infusions may become necessary to relieve collapse, but the amounts of blood are often overestimated, on account of the large quantities of saliva and serum mixed in.

Louis Bourget of Lausanne, in a book published in 1906, is more optimistic in regard to local treatment of gastric hemor-

rhages than I or others have ever been. I am very anxious to avoid the stomach tube for obvious reasons, sometimes because I am afraid of removing the clot which may already cover the bleeding ulcer; mainly when the sore is near the cardia. Bourget does not *fear*; he advises the introduction of a soft tube. After emptying the stomach he introduces one hundred cubic centimeters of a one per cent. solution of iron sesquichloride. It is removed and replaced by a new injection. This is repeated four or five times until the liquid returns clear. The same procedure is continued for four or five days. In rare cases he allows the patients to drink the fluid and then turns them on their faces.

Protracted cases—that is those which relapse from time to time—almost always through the fault of ill-behaving patients—require in addition to the above treatment silver nitrate, fifteen milligrammes in a tablespoonful of distilled water three times a day, two hours after a meal. That administration is to be continued a month, discontinued a while for fear of argyria, and perhaps begun again. It may be given in a pill. The quantity I do not exceed in a month is one and five-tenths grammes. It has been stated that thirty grammes will cause argyria. With the care I have been in the habit of taking, it should not be feared. I have seen two cases of my own, but none these thirty years. Silver nitrate has been credited with neutralizing hydrochloric acid by throwing down the chlorid. As this is inert, I see no advantage in giving it on account of such an indication; that aim is more readily reached by an alkali.

Iron should not often be given in the anemia of gastric ulcer. I prefer to look for occult hemorrhage, and to give such food as the ulcerated stomach may aid in changing into blood and tissue. Give no proprietary iron preparations. Chemists and druggists may be gentlemen, but their labels introducing them as “representatives” or “M. D.’s” may be deceptive. I claim the benefit of the doubt and refuse to admit them. Ferratin, the lactate, and the carbonated iron of the Pharmacopeia should be selected when iron is to be used after convalescence has been established.

Albuminates of iron are tolerated by many. Ewald prepares a two or three per cent. dilution of iron sesquichloride in water; one teaspoonful of this is given three times a day in a wineglass of egg water. This means one white of egg in two parts of water.

Dietetic treatment of ulcer of the stomach, or rather of patients suffering from ulcer is as follows:

Leube demands rest for both body and stomach. Patient is in bed, has hot fomentations on his precordia, ice during a hemorrhage. The diet is restricted. For ten days he has boiled milk, bouillon, Zwieback; the week following, rice, sago in milk, raw or soft-boiled eggs, calf's brain, sweetbreads. Five more days, scraped raw ham, scraped beef, boiled calf's foot, some coffee and tea, mashed potatoes. Seven more days, rare roast beef, broiled chicken, macaroni, some little bread. A gradual return to general diet. Leube lives in Würzburg. Leuhartz, who lives in Hamburg, where they eat well and plenty, calls the above diet underfeeding; on the principle that "anemia and hyperacidity are predisposing causes of ulcer and retard the patient's recovery," the patient has immediately, even after a hemorrhage, a concentrated albuminous diet of milk and raw eggs with sugar, so that after two weeks 3,000 calories are taken; on the sixth day, chopped meat; on the seventh, rice; on the tenth, raw ham and butter, in addition to the above.

Senator nourishes without overloading by gelatine, cream, frozen butterballs, and sugar.

Schmidt, in *D. Med. Woch. Nov. 22, 1906*, claims that Leubhartz is correct and Leube is correct, but Leube should add eggs, gelatine, butter, cream, sugar, and rice. He also says that chopped meat and scraped ham should be given "only with caution." I prefer caution both to chopped meat and scraped ham. Neglect caution once and you lose the game, for a time at least.

What I prefer is as follows: No solid food of any kind for weeks. Milk in any shape—raw in the country, if reliable; always boiled in the city and preserved rationally. Buttermilk, sour milk, are well tolerated by most patients. The doses must be small, in frequent intervals—that means five or six meals a day. Milk must not be drunk like water—to prevent hard caking in the stomach; let it be poured into a plate and eaten with a spoon—from two to four quarts in twenty-four hours. Patients may have stale bread—toasted or not. They should eat it mostly without moistening. Normal saliva is alkaline—only slightly acid in dyspepsia and feverish conditions, in diabetes, etc. They may also have rice, powdered, immersed in water for hours, and slowly boiled in water, and finally in milk. Rice water or barley water may be admixed to this milk for people who have to get

accustomed to taking milk. Now and then you hear of such as say they cannot and will not take milk. Let them try starvation—they will soon be enlightened and converted. On three quarts of milk and a pound of dry bread they will thrive and gain pounds of weight every month. Somatose, tropon, sanatogen, have been recommended for alleged or obvious reasons. Milk may be peptonized for those who prefer it.

The preparation of milk with hydrochloric acid, which I learned from Dr. J. Rudisch nearly forty years ago, and have often described—that is one part of dilute hydrochloric acid in 250 parts of water; which then is slightly boiled with one quart of milk (500 parts)—a process which permits milk to coagulate in thin floccules and is easily borne by invalids, is perhaps not so appropriate here on account of its containing or forming sodium chloride in excess. Sodium chloride, which I recommend as a regular addition to cow's milk under ordinary circumstances, should not be used in gastric ulcer. Bourget is wrong when he recommends it. It *will* form HCl.

Whenever anemia is excessive and hyperacidity (no matter of what nature) is present, egg (mainly the white) is tolerated. Even during bloody vomiting which threatens inanition, tablespoonful doses of iced milk and occasional doses of raw egg albumin, frozen, may be tried.

Nutritive enemata may be required. Ewald beats two or three eggs with a tablespoonful of cold water; then he boils a small teaspoonful of starch with half a cup of a twenty per cent. solution of grape sugar, to which is added a wineglassful of claret. To this he adds slowly the egg mixture; which must not be too hot. Before injecting, he washes the rectum. The enema may amount to 250 cubic centimeters.

A year ago I was present when a famous clinical teacher of the West delivered an elaborate address on gastric ulcer as a "surgical disease." I took it that he spoke of the affection as he sees it in his hospital wards only, and of the most acute attacks with hemorrhage or perforation. I feel positive from what I have said of its frequency in general practice and of the long time it takes negligent or indigent patients to nurse their illness up into the stages of hemorrhage or perforation you will admit—those of you who are or have been in general practice amongst all classes, mainly the poor or not well to do—that you see it often, treat it often, cure it often, and prevent it from getting

into a medical or a surgical hospital ward, there to be used by a diligent and punctilious recorder and the attending staff as material for deceptive statistics.

But you may have relapses and meet with obstinate cases, and those which bleed or perforate. Indeed, we should not claim a recovery when the symptoms have abated after four or five weeks. In that respect even Leube commits mistakes when he reports 424 cases, of which seventy-five per cent. recovered after four or five weeks; twenty per cent. improved; one and one-half per cent. remained unimproved; and two and four-tenths per cent. terminated in death.

Conservative surgeons are not, however, of the opinion of my clinical friend. They readily admit that seventy-five per cent. of gastric ulcers are cured by internal treatment. Both Warren (*Boston Med. Journal*, Nov. 13, Vol. 89, 1899) and Krönlein (*Arch. f. Klin. Chir.* vii. 79) agree on that point.

Warren reports on one hundred and eighty-seven cases. Permanent results could be obtained in one hundred and twenty-five; complete recovery took place in thirty-four and four-tenths per cent.; relapses in forty-three and two-tenths per cent.; carcinoma developed in two and four-tenths per cent.; stenosis of the pylorus and dilatation of the stomach in ten and four-tenths per cent; death caused by perforation in four and eight-tenths, and by hemorrhage in four and eight-tenths per cent.

Krönlein says that seventy-five per cent. of gastric ulcers heal under nonoperative treatment. The mortality of the other twenty-five per cent. is from ten to thirteen per cent. He reports on eighty-five operations, the method being no longer excision as formerly, but gastroenterostomy. The immediate losses after operation are from eight to ten per cent. Final results of eighty-five operations: recoveries sixty-one per cent.; improvements, twenty-four per cent.; secondary carcinoma, three per cent.

Dilatation of the stomach recovers very gradually, the secretion becomes normal, with the exception of a few cases in which HCl was not secreted when it had not been present before the operation. In his opinion no operation should be made early. His indications are stenosis and dilatation, also hemorrhage.

In a very brief paper, published in the *N. Y. Med. Monatschrift*, Sept., 1906, A. J. Ochsner claims that the indication for operative interference, for those cases in which no other treat-

ment proved successful are stenosis, dilatation of the stomach, and occasionally hemorrhage.

For him the difficulty of obtaining satisfactory statistics is the result of several factors: a patient changes his doctor in the course of a protracted disease; the doctor counts his own good cases, also the failures of the surgeon. The surgeon loses sight of his case, which returns to the practitioner, or to some other surgeon. Altogether Ochsner knows of the occurrence of a large number of cases that never see a surgeon.

The results of the operations depend on the method, to a large extent. Marco Donali (Turin, 1905) published a statistical review of 1,041 gastric operations. The resection of the ulcer furnished twenty-one and four-tenths per cent. of deaths, and so many relapses that the failures amounted to thirty-five and seven-tenths per cent. Gastroenterostomy reduced the percentage of deaths to fourteen and fifty-six one-hundredths per cent. That is still too many.

The surgeons I mentioned above are no mere operators, and therefore conservative. They are the representatives of a class which we hope will become more numerous—that class which is no longer bent upon splitting medicine into lifeless parts, but consists of physicians who add to diagnostic powers and therapeutic knowledge unusual dexterity. There is one thing they are not doing. These surgeons do not speak of Thiosinamin or fibrolysin which have been recommended for the absorption of all sorts of unabsorbable tissues—for esophageal stricture, pyloric cicatrices, and gastro-intestinal adhesions. Thiosinamin two decigrammes has been administered subcutaneously in a ten or twenty per cent. glycerine and water solution every two or three days. The injection causes pain. Its combination with sodium salicylate is called fibrolysin and is not so painful. That is probably the only difference. If they could do all that is claimed for them, there might be a panacea for all sorts of connective tissue hyperplasia in tabes, chronic nephritis, cirrhosis of the liver, chronic peritonitis, and meningitis. *Credat Judaeus Apella.*

We shall readily agree that stenosis of the pylorus, and gastrectasia, and ulcer not improved by rest and diet and medication should undergo operation; we admit that the indication for operation in hemorrhage or perforation may seem urgent to one and quite doubtful to another, for it is a fact that many die

without an operation, many get well without an operation, though its performance seemed urgent, many die after an operation, in spite of it or because of it. It is in such cases that responsibility lies heavy on one's soul, and remorse or reproach, as the case may be, may not die out for a long time. Such are the dangers and the vicissitudes of the war against disease.

Finally, a word of warning. We are not in different camps. The question of internal or of external treatment is no partisan affair. We are all physicians with common aims. To the class of absolutely positive indications for operative interference, we add a number of cases that offer difficulties to the most honest and experienced judgment. In such cases the old proverb should not be forgotten: "*Anceps remedium melius nullo*,"—a doubtful remedy is better than none at all. But after the operator has performed his welcome duty, the case is again yours—the practitioner's. After the operation you may have an organ of doubtful utility. The creation of a funnel is not the restoration of a normal stomach. The patient requires careful supervision of his diet, and may require medication. Hyperacidity may require alkali a long time. Some of our surgeons—I rather feel like saying, too many—are often satisfied with a temporary success. That is why your stomachs may not remain well—why your uteri do not really recover, why your adenoids relapse. These are the cases in which the conscientious skill and the modest patience of the practitioner has to accomplish the final and permanent cure of the patient who has been temporarily relieved by a brilliant achievement—by means of supervising the daily habits and diet, and the local and general circulation, and by hygienic and medicinal preventives. No trumpets tell our glory; that tedious care looks like a humdrum annoyance to the patient, but it saves him from relapses and undertakers.

ASSOCIATION OF THE ALUMNI OF THE ALBANY
MEDICAL COLLEGE—THIRTY-FOURTH ANNUAL
MEETING.

The thirty-fourth annual meeting of the Association of the Alumni of the Albany Medical College was held in the amphitheater on Friday, May 3, 1907. The usual informal reception was held in the college library, where photographs were exhibited, greetings exchanged and ballots cast, between the hours of 5 and 7 P. M. The annual meeting was called to order by the President, Dr. Thomas Wilson ('74), of Hudson, N. Y., at seven o'clock.

The following named members of the Association, with invited guests, students of the college and others interested, were present: Matthew R. Carson, Charles N. Hewitt, Hamblin B. Maben, Henry D. Wells, ('57); Abram DeGraff, ('58); Herman Bendell, Albert Vander Veer, ('62); Alfred B. Husted, ('63); Daniel V. O'Leary, ('66); David Norwood, ('67); Joseph R. Brown, Romeo E. Hyde, Charles F. Scattergood, ('68); Daniel C. Case, Willis G. Tucker, ('70); John K. Thorne, Gebhard L. Ullman, ('71); Joseph H. Blatner, ('72); Henry E. Mereness, Thomas Wilson, ('74); Franklin P. Beard, T. Kirk Perry, ('75); William Stevens, ('76); Jesse Crounse, David H. Lown, Marcus M. Lown, ('77); Frederick H. Brewer, John H. Cotter, Earl D. Fuller, ('78); Ezra A. Bartlett, Osman F. Kinloch, William J. Nellis, ('79); E. C. Collins, George S. Munson, Sabbati E. Ullman, ('80); Alva E. Abrams, Frank Beebe, Frederick L. Classen, James H. Mitchell, ('81); Wallace B. Deitz, Adam Y. Myers, Walter W. Scofield, ('82); Charles P. McCabe, J. Wilson Poucher, J. F. Reilly, ('83); W. A. E. Cummings, ('84); Sylvanus C. Curran, Elmer E. Larkin, Martin McHarg, Douglas C. Moriarta, ('85); A. J. Blessing, E. E. Finch, Hermon C. Gordnier, ('86); Henry T. Brooks, M. Francis Drury, Arthur W. Johnson, Willis G. Macdonald, Andrew MacFarlane, Charles H. Moore, Herman V. Mynderse, James E. Sadlier, Charles Van Wert, Thomas H. Willard, Henry C. Young, ('87); John Archibald, George G. Lempe, G. Emory Lochner, ('88); Charles G. Briggs, J. Montgomery Mosher, Alonzo T. Powell, William Van Doren, ('89); Robert Brittain, Walter G. Murphy, ('90); Louis LeBrun, Arthur P. Van Loon, James W. Wiltse, ('91);

LeRoy Becker, George M. Fisher, W. Irving Goewey, John B. Grover, Arthur C. Hagedorn, Howard E. Lomax, Leo H. Neuman, ('92); Thomas W. Jenkins, John B. Ledlie, Thomas A. Ryan, Robert H. Tedford, Jr., Percy G. Waller, ('93); Charles Bernstein, Walter C. Gilday, Wilfred S. Hale, John R. McElroy, William J. McKown, James M. Moore, Arthur Sautter, ('94); Charles S. Butler, Frederick W. Cordes, Charles Gartner, Frederick J. Resseguie, Leonard G. Stanley, ('95); Garrett V. Johnson, Elbert A. Palmer, James C. Sharkey, Henry L. K. Shaw, ('96); Ira Applebee, Harry E. Battin, John J. Beard, Edward W. Becker, Herbert O. Brust, Charles Gray Cole, Robert C. Davies, Robert L. Ellithorp, William L. Fodder, John Giffen, Lewis T. Griffith, W. C. Griswold, F. Howell Greene, Frederick N. Guyer, Eugene J. Hanratta, Peter H. Keeler, Buel Latcher, Marshall Latcher, F. C. Leonard, Leonard McClintock, William C. McCulloch, William E. Silcocks, J. A. Stevenson, J. Willard Travell, ('97); Hiram A. Byrant, James M. Cronk, Charles S. Prest, Joseph P. O'Brien, Edgar A. Vander Veer, ('98); George E. Beilby, Christian G. Hacker, Eugene E. Hinman, Joseph A. Lanahan, Walter H. Sanford, Edgar R. Stillman, G. Scott Towne, ('99); Lawrence K. Dugan, Reed Gilmore, ('00); La Salle Archambault, Arthur J. Bedell, Joseph A. Cox, E. Gerald Griffin, John M. Griffin, Arthur F. Holding, N. A. Pashayan, Charles L. Witbeck, ('01); John H. Gutmann, Frederick C. Reed, ('02); J. Howard Branan, A. J. Douglas, Conrad R. Hoffman, Miles A. McGrane, Thomas O'Connor, James N. Vander Veer, ('03); John C. Cotter, B. K. DeVoe, Malcolm Douglas, Joseph N. B. Garlick, G. J. Jennings, William G. Keens, Robert J. O'Brien, Daniel V. O'Leary, Jr., Day Olin, Richard H. Van Denburg, Frank E. White, ('04); Arthur P. Clark, William M. Dwyer, C. W. Louis Hacker, Matthew J. Keough, Francis J. Noonan, Harry Rulison, Frank G. Schaible, Hamilton M. Southworth, Edwin B. Wilson, ('05); Henry F. Albrecht, John Breen, Morey C. Collier, Frederick C. Conway, T. Frederick Doescher, H. Ernst Gak, Joseph F. Harris, William A. Krieger, Price Lewis, David C. Nolan, G. Fletcher Robinson, Willis N. Simons, L. Dwight Washburn, ('06); Charles S. Allen, Floyd J. Atwell, George W. Beebe, Joseph Lewi Bendell, Edward G. Benson, Howard P. Carpenter, William D. Collins, Erastus Corning, Marcus O. Cronin, J. Lewi Donhauser, Frederick Frisch, Alfred T. Gabriels, Louis H. Gaus, Norman C. Goodwin, Alfred W.

Grover, Alexandro B. Guilliod, Augustus J. Hambrook, Edward W. Jackson, Dean W. Jennings, Clarence R. Kay, Roy C. Keigher, David Kidd, Tiffany Lawyer, Richard A. Lawrence, Jacob H. Linden, Robert S. Lipes, James E. Maloney, John Sears McCormack, Jerome Meyers, Zenas Van D. Orton, William C. Porter, Stephen J. H. Reed, Fred. J. Rice, James T. Riley, Frederick Seilheimer, James J. Shea, William C. Tredor, Herbert J. Wright, ('07); James P. Boyd, Henry Hun, Samuel B. Ward, (Hon.).

On motion of Dr. Tucker, the reading of the minutes of the last annual meeting was dispensed with and the minutes were approved as printed in ALBANY MEDICAL ANNALS.

The President introduced Professor Joseph D. Craig, who delivered the following address of welcome on behalf of the faculty:

ADDRESS OF WELCOME.

As a representative of the faculty of the Albany Medical College, the agreeable task has been assigned to me of extending to you, the Alumni of the College, a cordial greeting to this reunion and of giving you a royal welcome to Alma Mater. It is the more gratifying to me to have been chosen to deliver this short address of welcome, for the reason that I can heartily unite with the decennial classes in this joyous celebration, for I complete to-night my twentieth year of continuous and congenial service in this honored and dearly loved institution of medical learning. As I look back over these twenty years of love's labor and recall all the pleasant associations with my professional colleagues in the faculty, all of whom, with the exception of the deeply lamented and highly esteemed Townsend and Perkins, I rejoice to record are still among the living, and remember all the happy, hopeful, interested, inspiring faces of the four hundred students of medicine with whom it has been my felicitous fortune to have studied during all these years, many of whom I doubt not are in this presence to-night, my heart is filled with an overpowering sense of gratitude for the privilege of such long service in the cause of science and such congenial surroundings and cherished companionship.

This large outpouring of graduates of this institution in attendance on this sixty-ninth commencement is a most hopeful indication of a revived interest in the affairs of the college, a most convincing expression of loyalty to the institution and a promising augury for a continuation of both interest and loyalty.

It makes the heart grow young again to return, after years of absence, to the alluring scenes of student life; to recall to pleasurable memory for an hour the joys and sorrows of student days. To long to turn back at favoring anniversaries and recount the experiences of earlier years; to be conscious of agreeable emotions dominating the intellect at the thought

of reviving the companionship with once associated students of medicine indicates a mind tuned in harmony with the humanities of life. Whatever may have been the life interest of any graduate of this institution subsequent to graduation, whatever his successes or failures, however diversified his occupations, however far his professional duties may have caused him to travel from his college home, his craving, upon occasion, to live over again the old scenes surrounded by the boys of the old days, demonstrates the unabated vigor and strength of a character still unselfishly in sympathy with the interests, the happiness and progress of the institutions and men of his time.

Unfortunately here and there an alumnus of this and other institutions of learning may be found, a rare specimen, who is incapable of sound and sane mental processes and of attuning his thoughts to his circumstances and surrounding. He it is who permits himself to speak the words of disrespect or derogation, who forgets the interest and sacrifices of former instructors in his behalf, who overlooks the excellent opportunity for education once offered him within his means to grasp, who cultivates a cold and calculating spirit, who lives in the ideal, the ego, the expansive personality and in critical spirit estimates all human institutions from his own exalted standpoint. Such men are worthy of the reprobation of their fellows and deserve to die "unwept, unhonored and unsung."

It is fitting in this address of welcome that a word should be said concerning the constant evolution along practical and progressive lines which characterizes the growth of the Albany Medical College. Those of you who celebrate your first decennial anniversary to-night will note the marked changes which have occurred in every department of the college. Those who graduated twenty or more years ago will scarcely recognize the present course of instruction, so complete has been the revolution made necessary by new ideas, by progressive methods, by revolutionary and epoch-making discoveries in medical science. Ten years ago bedside instruction in medicine and surgery was in its infancy in this and other medical colleges. To-day such methods take equal rank with didactic lectures. The magnificent opportunity offered this college by the newly constructed Albany Hospital and by other hospitals of Albany recently reconstructed, has been accepted, and during the college term these charitable institutions daily contribute to the clinical education of medical students. Private beneficence founded the Bender Laboratory, with the result that the medical college has the most favorable means at its disposal for thorough educational courses in bacteriology and pathology. The fundamental branches of medical knowledge have also felt the reviving spirit of progress. Chemistry and materia medica have taken upon themselves more and more practical methods of instruction. More and better tests are made in the chemical laboratories and a more practical acquaintance encouraged with actual specimens of medicinal roots and leaves and alkaloid. Physiology has gained largely in practical exemplification of its principles through the recently opened laboratory of physiological chemistry. The scope of practical instruction in anatomy has been enlarged. There are more and more practical demonstrations in this important

branch of medical training through systematized instruction in laboratory classes, while a revolution has taken place in the methods of dissecting-room demonstrations.

It is not, however, of these details of instruction of which I wish to speak so much as of the spirit of progress in general which has conspicuously marked the course of this institution during the last ten or more years and of the good fellowship which, it is hoped, will reward your return to Alma Mater this alumni day.

You have no need to feel ashamed of or to apologize for the Albany Medical College. This is a time rather for enthusiastic boasting of her good qualities and her vigorous performance of every legitimate function of an institution of medical learning. It is a fact that the college ranks in scholarship among the first of her kind in all America. The records made by graduates of this institution before state boards of examiners proves the right of the college to a commanding position among similar institutions. The faculty, as never before, is alert to provide the best undergraduate instruction to be obtained anywhere. Modern methods and ideas are at practicable times introduced into the curriculum. The results so far obtained are most gratifying. Alma Mater is in all things worthy of your zealous support, your favorable recommendation and your hearty approbation.

While alumni day is one on which we feel especially free to extol the virtues and sing the praise of Alma Mater, it is also a time for the keen enjoyment of an altogether too brief association with the boys of the classes of the days that are gone. On this day of days no cloud of doubt or strife should gather in the sky. You, the boys who struggled together up the difficult mountain of scientific medicine and who reached the top, whose personalities were actuated by the same ambitions, who shared the same trials, who inculcated within each other feelings of mutual regard and help, have come together at this decennial reunion to live again the old days, to greet each other with the warm hand clasp, to congratulate the abundantly successful, to sympathize with the sorrowing and to pause for a moment in the midst of all the jovial companionship to record a word of appreciation of the lives and character of the dead. Surely it is inspiring to be here and to breathe such an atmosphere of good fellowship as pervades the college to-night. The faculty appreciates the spirit of the hour and wishes you the thorough enjoyment of this festival season.

While we greet the old boys, we must not forget to welcome the young gentlemen who to-night assume the dignity, the duty, the responsibility and the privilege of members of the alumni of this college. They have not, perhaps, experience in the practical art of medicine, they can bring no reminiscences of old days. Nevertheless, they have the glorious present and vigorous youth with them. They have also climbed the difficult mountains and are now at the top. They are of the alumni, and as such we trust the inspiration of congenial association and good fellowship will be theirs.

It is the earnest wish of the faculty of the college that it may often have the encouragement of large numbers of alumni in attendance on commencement day; that every one may enjoy to the full their pilgrimage

to Alma Mater, and that all the proceedings of this Association may promote harmony between its members, renew interest in the welfare of the college and conduce to the well being of the institution.

Again I welcome you to Alma Mater. May she prosper in every laudable endeavor, retain the sincere affection of her children and continue to merit their unqualified approbation.

On motion of Dr. Arthur G. Root, the thanks of the Association were tendered Professor Craig for his address and a copy was requested for publication.

The Recording Secretary presented the

REPORT OF THE EXECUTIVE COMMITTEE AND RECORDING
SECRETARY.

Five meetings of the Executive Committee have been held during the year.

At the first meeting, held May 7, 1906, the Recording Secretary presented the minutes of the Thirty-third Annual Meeting of the Association, including an account of the commencement exercises, and was authorized to publish these minutes in the ALBANY MEDICAL ANNALS and to provide reprints for distribution to the members of the Association in the usual way, the Treasurer being authorized to pay the cost of the reprints and the envelopes for mailing. Dr. MacFarlane, of the Alumni Banquet Committee, presented a report of the cost of the annual dinner, showing a balance in the treasury of the Association from the sale of tickets of \$24.65. The Committee entered upon a general discussion as to the best means of encouraging the interest of the members of the Association and of stimulating the attendance, which resulted in the adoption of the resolution that the Treasurer be directed to send a bill for annual dues to every member of the Association, with a statement of the reasons therefor. This resulted in the publication of the circular of May 10, 1906, which was mailed as directed. A special committee was also appointed at this meeting to report upon the best probable plan of balloting for officers of the Association. The vacancy in the Executive Committee following the election of Dr. Thomas Wilson to the presidency was filled by the choice of Dr. Thomas Carney, of Schenectady, of the Class of 1902. The gavel presented by Dr. John H. Cotter at the last annual meeting of the Association was turned over to a special committee for the proper inscription.

The second meeting of the Association was held on November 7, 1906, when the Treasurer reported a balance on hand of \$104.68, and the special committee appointed to report upon the best probable plan of balloting for the officers of the Association submitted several resolutions, which were acted upon individually after discussion:

Resolved, That the Executive Committee prepare annually a printed ballot to be used by members of the Association for the election of officers

of the Association, which shall be mailed to every member of the Association, where name and address are on its rolls, not less than one month before the annual meeting.

Resolved, That any member's ballot is valid which bears his signature and address, and is received on alumni day, not later than an hour to be specified by three tellers appointed by the President of the Association.

Resolved, That the President of the Association be empowered to appoint each year three tellers from the membership of the Executive Committee to collect and count the ballots at the annual meeting, one of said tellers to be designated by the President to receive the ballots.

Resolved, That nominations for the various offices to be elected at the annual meeting of the Association be made by the Executive Committee at such time as to permit the printing and distribution of ballots to meet the requirements of the resolution regulating the preparation and mailing of the ballots.

Resolved, That the Recording Secretary be directed to notify the secretaries of the Alumni Associations of New York, New England and Central New York, respectively, of the action taken by the Executive Committee and request them to nominate two candidates each for the office of Vice-President.

Resolved, That the Executive Committee nominate each year two candidates from the Association at large for Vice-President and that from the five Vice-Presidents elected select hereafter each year two candidates for the Presidency of the Association to be the nominees of the official ballot.

Resolved, That on the official ballot prepared by the committee space be left for the insertion of names for each office, to be written in at the pleasure of the member signing the ballot.

At this meeting a committee of five, consisting of Drs. Sautter, Mosher, Adt, Griffin and Carney, was appointed to arrange for the entertainment of Alumni Day, and a resolution was adopted requesting the student fraternities and decennial classes to co-operate in the program.

The third meeting was held at the Hotel Hampton on February 6, 1907, where the Executive Committee were entertained by President Wilson. After the lunch had been enjoyed an informal discussion ensued as to the best method to be adopted in the celebration of the annual reunion. The questions of the menu, the complimentary dinner tickets, souvenirs, class and fraternity reunions and printing were referred to committees. A Board of Tellers, consisting of Drs. Carroll, Lomax and Bedell, was appointed to present a ballot for the election of officers of the Association to be considered by the Committee.

The fourth meeting was held in the College library February 20, 1907, and reports were received from the committee on entertainment, the committee on souvenirs and the Board of Tellers, and the committee on printing and postage. The Board of Tellers presented a sample ballot to be used for the election of officers. Their ballot was approved. The pro-

gram for the day was arranged in the manner which has been announced on the circulars mailed to the members of the Association.

The Committee made the nominations of candidates for the officers of the Association whose names should be printed on the ballots:

For President:

Mark M. Lown ('77), Rhinebeck, N. Y.
Thomas H. Willard ('87), New York City.

For Vice-Presidents:

Walter G. Murphy ('90), Hartford, Conn.
Frederick F. Clark ('96), Westfield, Mass.
Henry B. Whitehorne ('73), Verona, N. J.
Earl D. Fuller ('78), Utica, N. Y.
Charles G. McMullen ('98), Schenectady, N. Y.
Robert F. MacFarlane ('88), Long Island City.
Charles Bernstein ('94), Rome, N. Y.
Douglas C. Moriarta ('85), Saratoga, N. Y.

For Recording Secretary:

J. Montgomery Mosher ('89), Albany, N. Y.

For Corresponding Secretary:

Andrew MacFarlane ('87), Albany, N. Y.

For Treasurer:

Robert Babcock ('84), Albany, N. Y.

For Historian:

Eugene E. Hinman ('99), Albany, N. Y.

For Executive Committee:

John F. Reilly ('83), Rensselaer, N. Y.
Leo H. Neuman ('92), Albany, N. Y.
Henry L. K. Shaw ('96), Albany, N. Y.
James W. Wiltse ('91), Albany, N. Y.
George B. Grady ('96), Watervliet, N. Y.
William J. Wansboro ('95), Albany, N. Y.
Henry W. Johnson ('91), Hudson, N. Y.
Isaac E. Van Hoesen ('03), Coxsackie, N. Y.

On motion the Faculty were invited to detail a member to deliver an address of welcome.

The fifth meeting was held on April 22, 1907, at the call of the President, who stated that the objects of the meeting were first, the appearance of the anonymous circular and ballot issued in the name of the Association and second, to formulate instructions to guide the Board of Tellers in counting the ballots.

The Committee decided to issue a statement to the members of the Association in explanation of the ballot formulated by the Committee and disclaiming all responsibility or knowledge of the anonymous circular and

ballot. The following rules for the guidance of the Board of Tellers were adopted:

1. Any member has a right to vote any ballot he pleases.
2. Ballots are not to be counted until the polls are closed.
3. Any member may appear in person before the polls are closed and offer a ballot, which must be received.
4. Two or more ballots received by mail from the same person cannot be received, without he states in a communication, or in person, that he wishes to withdraw former ballots.
5. Any other contingency which the Board of Tellers feel unable to meet shall be submitted to the Association or to the Executive Committee for decision.

The report presented by the Recording Secretary was discussed by Drs. Herman Bendell, Arthur G. Root, E. C. Collins, W. W. Scofield, and A. E. Abrams, and the motion of Dr. Bendell to receive the report and place it on the table for final action was carried.

On motion of Dr. Willis G. Tucker, the report of the Executive Committee, in so far as it involved a change of proceeding in the election of officers, was laid on the table until the next meeting of the Association.

The Treasurer, Dr. Robert Babcock, presented his report for the year as follows:

TREASURER'S REPORT.

CR.

Balance on hand May 1, 1906.....	\$0 22
Dues received during year 1906.....	244 00
Total	<u>\$244 22</u>

DR.

Various bills paid for which vouchers are presented.....	230 71
Balance on hand May 1, 1907.....	\$13 51
College Building Fund.....	<u>118 13</u>

[Signed]

ROBERT BABCOCK,
Treasurer.

On motion of Dr. Willis G. Tucker, the Treasurer's report was referred to an auditing committee, consisting of Drs. MacFarlane, Hinman and Stevens, who subsequently reported it

correct. The report of the Auditing Committee was received and the committee discharged, and the report of the Treasurer was accepted and ordered placed on file.

The President's address being the next order of business, Dr. Joseph D. Craig, an ex-President of the Association, was called to the chair, and President Wilson delivered the following address:

PRESIDENT WILSON'S ADDRESS.

Members of the Alumni Association: My first duty, and a very pleasant one it is, is to thank you most sincerely for this esteemed compliment and honor. When I first learned that my name had been presented by your Committee on Nominations, I frankly confess I was taken with surprise, as I should not have entertained such a thought. I felt constrained from my want of competency for such a position, as I was less familiar with the methods of procedure than some of our more eminent alumni who had enlisted their energies and given their time for this object and who might justly have looked forward to the honor of presiding over your deliberations to-day.

Whatever you may have determined my personal merit to be, I may discern some propriety in your choice of a president whose membership dates from the inception of the Association. The Association was incorporated on February 6, 1874, and the class of that year, in which I was enrolled, received their diplomas on December 22d. It was a stirring time of which it is no exaggeration to say that it was the beginning of renewed and increased vitality of the college. A few months previously the confederation known as Union University had been effected and greater achievements were anticipated from the new relation established by the rejuvenated department of medicine. The importance of the local institution was attested by the presence at the commencement exercises of a Governor and an ex-Governor of New York State, who both felicitated the occasion by most cordial addresses, of a character to leave a lasting impression upon the young men who were to enter upon the struggles and responsibilities of real life. We who had been about the college during the organization of the Alumni Association were the first to be received in a body into membership, the first to witness a reunion of graduates and to hear from them the stories of their experiences and the comments upon the wisdom of the instructors of their youth who had prepared them for successful careers.

Few here are acquainted with the fact that this Association was suggested by two undergraduate members of the class preceding mine, Drs. Henry B. Whitehorne and S. Oscar Myers, who sat with me upon the college benches. Some uncertainty was felt in the faculty as to the wisdom of the proposed association, and fear was expressed that an annual meeting of graduates would result in criticism and undesirable interference with the affairs of the institution. That this apprehension was

unfounded has been amply shown by the cordial attitude assumed by all alumni who attend the annual meetings or are otherwise thrown in contact with the administration of the college.

The first circular stated: "The period seems to have arrived in the history of our *Alma Mater* when her children should make some return for the benefits received from her nurturing care, in striving to strengthen her interests, enlarge her usefulness and advance the social and professional intercourse of the Alumni by combining and concentrating their powers, talents, acquirements and resources for the extension and promotion of the cause of a liberal medical education in connection with the institution. To accomplish these ends, organization and frequent association constitute a primary requisite, and these advantages we hope to attain by the proposed alumni association, in the perfection of which we trust we shall receive the hearty co-operation of every graduate of the College." The Certificate of Incorporation aspired to even greater achievements, including "the collection of funds by contribution and subscription, and the holding, application and investment of the same for the establishment and endowment of professorships and fellowships, the creation of prize funds, and for the purposes of buying, holding or leasing property for any and such other purposes of medical and scientific investigation and instruction, in connection and in co-operation with the Trustees of the 'Albany Medical College,' as the said 'Association of the Alumni' of said College, in accordance with its Constitution and By-Laws may direct."

One cannot read these expressions of strong definite purpose without being struck by the loyalty, enthusiasm and good-will breathed by them. Of the four signers of the corporate act, two only, Drs. Tucker and Henry March, were members of the College faculty, and of the fifteen office bearers of the first year, five, including Dr. Tucker, the *ex-officio* Secretary, were residents of Albany, and none other than Dr. Tucker held any official connection with the College. That these men should return from remote regions after years of absence, from the activities, cares and interests of long-established residence and practice, to indicate by disinterested offers of help, their sense of obligation, is a most impressive incident. Strong must have been the teachers who could arouse such expressions of affection.

That the College has never called upon the Association to meet this implied debt is additional testimony to the virility of its faculty. But the question presents itself to us, the Alumni, whether or not we should have permitted our Association to slip back into a state of desuetude; whether it would not have been better for the Association as an Association and its members as individuals to have declined the annual hospitality of the College faculty, and to have returned each year to live up more fully to the spirit of independence and help which was manifested in the phraseology of the articles of incorporation.

This situation has occupied my thoughts during the past year, and has been stated to our Executive Committee. I have felt that I have been in a position to understand all its bearings. I have witnessed the tendencies of the Association during the thirty-two years of its existence and have attended nearly all of its annual meetings. I have resided sufficiently near

to retain my acquaintance with the College and the work of its faculty, and after as careful deliberation as I am able to give, I believe that the achievements of the institution by the unaided efforts of the faculty are such as to awaken the pride and arouse the enthusiasm of every man who earns his living under the protection afforded by its diploma.

In the third of a century since the Association was organized, greater advance has been made in medical knowledge, and more changes have taken place in medical practice, than in the preceding five hundred years. Bold as this statement may appear, it is easily within the limits of fact, for in this short time empiricism has had its death blow, and an accurate and exact science has arisen from the dust of theory. And if the practitioner, in his daily investigation of disease, realizes that his processes of reasoning have assumed new directions, how much greater is the variation in the methods of instruction! Thirty years ago the teaching of medicine was a relic of the most ancient method of transmission of knowledge—oral tradition. The candidate of that day for the degree was required "to exhibit certificates from a physician or surgeon, duly authorized by law to practice his profession, that he had studied medicine and surgery under his instruction during a term of three years," and must have attended two full courses of lectures, one of which must have been in the institution from which he received his degree. The term of lectures continued sixteen weeks. A medical college of that day was an association of physicians who found it expedient to instruct in classes, rather than to answer the questions of students who for three years crowded their offices and insatiably sought information in any way it could be had. There was no graded instruction, each lecture course was like the other, and each student expended his energy in securing as much as he could of the mass of facts accumulated in the years of experience of his preceptor. The plan was not altogether a bad one, for the bane of the didactic lecture was counteracted by the antidote of practical work in attendance upon the sick under skilled direction, in assisting at operations and applying dressings, in the dispensing of drugs and in the hundred and one tasks of which the older man was only too willing to be relieved.

The catalogue of the Albany Medical College for the year 1874 gave the names of eleven instructors and one hundred and sixteen students, or about one instructor for every eleven students. This, however, did not represent personal instruction, as of these the demonstrator of anatomy and the professor of chemistry only gave individual assistance in the dissecting room and the laboratory. The others were engaged in delivering lectures to the whole body of students, who sat patiently on the hard benches and listened to the same things twice. The Albany Medical College is not taken as an exception, but as representing the practice in the medical colleges of the country and the character of the instruction. Its professors were men of wisdom, education and superior attainment, but the days of specialties had not come, and general knowledge was all that was had or could be imparted. It is interesting to note the change since taken place. In our catalogue for the current year there are the names of fifty-nine instructors, twenty-seven clinical assistants and one hundred and sixty-five students—or one instructor for every two students! The

difference is not only in statistics. The curriculum covers four years, and provides for a graded course, no part of which is repeated and all of which is necessary before the student is an eligible candidate for the degree of Doctor of Medicine. In the first year he spends thirteen hours a week at lectures, seventeen at dissecting and in the chemical and histological laboratory, and six in recitations; in the second year he spends twelve hours at lectures, twenty at dissecting and in the laboratories of organic and physiological chemistry, and of bacteriology and pathology, and in recitations; in the third year, seventeen at lectures, eight in the laboratories of clinical microscopy, of surgical pathology, and of obstetrical histology and pathology, one hour in a medical conference, five hours at clinics and two in section work in physical diagnosis and ophthalmology, and six in recitations; and in the fourth year, ten hours at lectures, four at recitations, two at conferences, six at clinics and thirteen at clinical section work. In other words, in four years the student spends half his time at lectures and half in the exercise of his eyes and his hands in the laboratory and clinic and at the bedside.

This transformation in the college course has not been accomplished without great effort. Those of us who remember the small dissecting room under the amphitheater and the chemical laboratory as the only means of personal investigation; and who recall the weekly clinics at the hospital where we "observed" operations from the seats, may well appreciate the great advantages possessed by the students of to-day. The old college building has been renovated and enlarged, and every available corner has been pressed into service. The surgical museum of the first floor has been converted into a lecture hall; the south wing, originally occupied by the law school, has been remodeled, first into alumni hall and a year ago into a laboratory of physiological chemistry, to meet the latest requirement of medical investigation and medical teaching. The old dissecting room is used for recitations, and a more commodious anatomical department has been established by the elevation of the central structure an additional story. The chemical department, originally a one-story wing on the north, has been elevated to two floors to meet its wants. The whole building has been refurnished, painted, a steam-heating plant has been installed, a proper ventilating system has been introduced, and in every way it has been adapted to its purposes so far as its resources admit. The prestige of its long history, the sentiment which must always cling about the halls, for the twenty-five hundred men who there received the inspiration of their life's work, cannot and should not be lightly regarded, and if facilities are given to do the work which should be done, respect for antiquity, for history and for association should preserve this old home as long as it can withstand the march of time. To my mind it is unwise at this time to ignore potent facts in the situation and to yield to the modern fury for change, for riches and for display. You may recall the description of a dandy given in the inimitable *Sartor Resartus*: "A Dandy is a Clothes-wearing Man, a Man whose trade, office and existence consists in the wearing of clothes. Every faculty of his soul, spirit, purse, and person is heroically consecrated to this one subject, the wearing of Clothes wisely and well: so that as others dress to live, he lives to dress." May not the

same idea be made to describe the passion of institutions for building? Is elegance of the structure proof of the thoroughness of work? In fact, as one is ushered through the sumptuous buildings of an institution of learning, and has pointed out to him by his guide the numerous triumphs of architecture, the thought naturally follows that its purpose has been overwhelmed by its magnificence. The man who is looking through a microscope will discover as many facts if the room he occupies is enclosed in brick as in marble, provided the windows are clean, the lenses good, and his ocular apparatus in physiological continuity with a well-trained cerebral cortex. It would be well for us to remember, when momentarily dazzled by onyx, marble and bronze, that the workshop of Pasteur was described as a "ramshackle shed;" that Marion Sims evolved the science of gynecology in the huts of southern negroes; that Laennec grasped the essential facts of thoracic auscultation from a chance observation in the public streets! This question of architecture has been epigrammatically stated by a physician who said that he could treat his patients in a hemlock shed, if he carried with him into the shed intelligence and human sympathy.

The lexicographer tells us that a college is "an incorporated institution in which advanced courses are given." This is true of two important institutions of Albany which aid the Medical College in its work—the Bender Hygienic Laboratory and the Albany Hospital. The importance of these institutions, not only to the College and its students, but to the community, cannot be overestimated. The co-ordinate operation of three corporations whose objective point is the study and cure of disease is a boon carried to every town which their activities may reach. "The laboratory and the clinic—these are the two factors in your education," I quote from the introductory address of Dr. Pearce to the students in 1904. "In the first you study the machines of our bodies, their structure, functions and products, the alterations produced in them by disease, and the causes of these alterations; in the hospital, and dispensary, laboratories, also in the broader sense, you study results of disturbances of structure and function and learn something of the methods of curing these disturbances or at least alleviating some of their manifestations."

The laboratory is the point of origin of the medical advance which has made the last half century illustrious in the history of medicine. Our alumni residing in or about Albany have realized the great assistance rendered in the diagnosis and treatment of disease by the Bender Laboratory, and know that certain definite facts of semeiology to be decided by the laboratory are essential to correct knowledge. Thus the determination of meningitis is not to be assumed without the microscopical or cultural evidence given by the cerebro-spinal fluid; the practitioner who omits a search for the bacillus of diphtheria from a case of croup takes chances with the life of his patient; without examination of the blood in diseases of the hemopoietic system, an attempt at diagnosis is comparable only with the methods of a charlatan. The laboratory has even invaded the field of diagnostic surgery, and many operations depend upon the histological features of scrapings or segments obtained by harpooning. Indeed, a recent German contribution describes the success attending the diagnosis of gross

disease of the brain by puncture and harpooning of that organ, with subsequent perfection of operative procedure.

The older members of our Association may take a hint and a warning from these evidences of superior training of the young physicians of to-day. The complaint is occasionally heard that the domain of a long-established practitioner has been invaded by a beginner with his microscope, aspirator and hemocytometer, and that the patients are proselyted to the realm of science. These weapons prove formidable in the field of open competition, but need not prove invincible. Experience and calm judgment will always remain the stronghold of age against the enthusiasm of youth. But age and experience must be armed with the facts!

To the Bender Laboratory must be ascribed much of the credit of the modern supremacy of Albany among the medical centers of the country. To our fellow alumni this has not become altogether patent. He who has suffered from unequal competition should carry home this fact for contemplation. If he search diligently the causes of his possible disappointment, he may find he has rested too confidently upon the security of isolation. It is his duty to keep in touch with the advances in his science, and there is no better opportunity than that given by his Alma Mater. The laboratories and hospitals are always open to him. The work done may be observed by personal attendance or may be learned from the publications. Our Association conducts a medical journal which has received the highest commendation; is replete each month with the novelties and advances of scientific medicine, and should be read by every alumnus of the college. It is to be regretted that all these advantages are not utilized, and it is safe to say that the Alumni who manifest an active interest in the Association, the College, the periodical, represent only a decimal part of our membership. All that we may do individually or collectively in the way of active co-operation will be returned manifold, and the balance of obligation will always remain with us no matter how intimately we identify ourselves with our Alma Mater. The strongest organization for mutual advancement of physicians may be effected through an Alumni Association in intimate touch with the College and its departments.

The announcement during the last year that the graduates of only three schools, Harvard, Johns Hopkins and Albany, were distinguished by no rejections before the examining boards of seven states may well excite our admiration.

If I have seemed to dwell too long upon material conditions I may justify myself in your eyes by the attempt to attain my purpose by these means. This is an era of gigantic enterprise. Men who a few years ago were content with thousands now talk in millions. It remains to be seen whether an elaborate display means true progress; to await the possible reaction. To my mind it would be unwise to attempt magnificence for the temporary advantage to be obtained from such advertising. Our old college building, which is now used for about half the work of the school, serves admirably its purpose. The faculty acted wisely in resisting any pressure to abandon it for a monumental structure, and chose to elaborate part of its functions in the eminently practical hospital and Bender Labo-

ratory. And when in the future the demands of an ever-exacting science shall require further extension, the means will be forthcoming.

It is the duty of every graduate of the College to acquaint himself with these facts, and it is the proper function of the Alumni Association to bring from time to time an intelligent statement of conditions to its members. The indications are that the actions of the Executive Committee looking to rejuvenation have met your approval. The purpose of the Committee has been to individualize the Association, and to bring into action the co-operation of every member. It is expected that the affairs of the College and of the Association may appear of sufficient importance to secure from each member an expression of opinion. The means adopted are probably familiar to you. They are mainly, an annual election by ballot, the demonstration of every member's wishes, and the co-operation of the local Associations of New York City, Central New York and New England.

The constitution provides simply that the officers shall be elected by ballot. It has been the custom heretofore to appoint a Nominating Committee during the meeting of the Association and to deposit their report as a ballot, upon motion. It is now thought that with the greatly increased membership Alumni not able to attend annually should have a voice in the management. The nominations by the Executive Committee are made merely to give an impetus to this movement, and as suggestive only. Such is the common custom obtaining among associations and clubs. Any member is entitled to make different nominations, and space has consequently been left under each office for the insertion by the voter of other names if those proposed fail to meet his approval. The honest purpose of the Committee is revealed in the construction of the ticket. The candidates for the presidency have been chosen from the lists of two decennial classes who will hold reunions on Alumni Day. The executive officers of the Association, the two secretaries, treasurer and historian, who carry on the laborious duties of its machinery, and have served continuously, are renominated. For the Executive Committee the names of several members not residing in Albany have been added, in the expectation that the heretofore severely local character of the Association may not remain too prominent.

The movement is important and vital in the history of the Association. It follows the recommendation of Dr. Willis G. Tucker, in his presidential address of 1899, based upon his long service of twenty-five years as recording secretary, and representing his opinion as to the direction in which advance should be made. It is the method now adopted by many scientific societies, and is probably the only way in which the wishes of a large, unwieldy organization may be manifested. It prevents a small, compact body of men from putting through a slate at a slimly attended meeting. It should remove all suspicion of personal ambition and self-seeking.

In extenuation of my claim for your interest, I have endeavored to show that the College is worthy, is prosperous, and that when it comes to you for the fulfilment of the promise of help of your corporate act, you will know that its demands are justified by the wisdom already shown in its three-quarters of a century of active and honorable existence. If the

founders desire to "make some return for the benefits received from her nurturing care," how much greater the opportunity and the obligation for us!

Gentlemen of the Class of 1907: In accordance with the most pleasant custom of years it is my duty to welcome you into membership. You have heard that our Alumni Association was proposed by undergraduates occupying the same relative position as you occupy to-day; and you may understand in some measure how much greater is your debt, after four years of careful instruction, than that of your predecessors. You are better prepared to care for your patients than they when they stood in your place. And when you enter upon your duties you will find a cordial welcome and a heartfelt desire for your success. You have enrolled yourselves in that most fortunate class of men who have chosen an occupation which requires exercise and growth of the mind. To them life never palls. Amusement, riches, idleness have their limitations and their distresses, but to the mind busy with observation and study there constantly open new vistas of discovery and advance, each one affording its delight. Poor Richard said that "it is hard for an empty sack to stand upright." No physician of to-day can be empty; no physician can stand otherwise than upright. Gibbon cites the plaint of the Caliph Abdalrahman, whose regal pomp might excite our admiration and envy. His servants, wives, concubines and black eunuchs amounted to over six thousand persons, and he was attended to the field by a guard of twelve thousand horse, whose belts and cimeters were studded with gold. Upon his decease this memorial was found: "I have now reigned over fifty years in victory or peace; beloved by my subjects, dreaded by my enemies and respected by my allies. Riches and honors, power and pleasure have waited on my call, nor does any earthly blessing appear to have been wanting to my felicity. In this situation I have diligently numbered the days of pure and genuine happiness which have fallen to my lot; they amount to *fourteen*;—O man! Place not thy confidence in this present world!" And Gibbon wisely comments, "The luxury of the Caliphs, so useless to their private happiness, relaxed the nerves and terminated the progress of the Arabian empire."

Medicine is an exacting pursuit, but thrice blessed is he who has chosen a calling in life which always demands the healthy exercise of his mind.

The members of the Class of 1907 were present in a body, and rose as the President addressed them at the conclusion of his address, and received them into membership in the Association.

Dr. Bendell moved a vote of thanks to the President for his interesting address, a copy of which he was requested to furnish for publication in the ALBANY MEDICAL ANNALS. The motion was seconded by Dr. Stevens, and ex-President Craig put the motion to a vote, and declared it unanimously carried.

President Wilson then resumed the chair.

The report of the Historian of the Association, Dr. Hinman, was then presented, ordered entered on the minutes, and, on motion of Dr. MacFarlane, the thanks of the Association were tendered Dr. Hinman for his painstaking work.

REPORT OF THE HISTORIAN, E. E. HINMAN, M. D.

Gentlemen of the Alumni Association: Again it becomes my very pleasant duty to present to you additional records of those who have gone forth from these halls to practice our art. I wish to acknowledge my indebtedness to the several class historians who so kindly communicated with all the living members of the several classes, securing data which enabled me to make the class records much more complete than heretofore.

The Class of '47 went forth thirty strong, and to-day not one is known to be living. We have records of seven who have died. The rest have either died or disappeared, leaving no record.

The Class of '57, which to-day celebrates its Golden Anniversary, numbered forty-seven. Of that number seven are living and have reported this year. Twenty-three have died, of which number we have biographical records of six and only notice of death of seventeen. We have no record of the remaining seventeen.

The Class of '67 numbered thirty-four. Seven are living of whom we have biographical records. Thirteen have died, of which number we have biographical records of one and only notice of death of twelve. We have no record of the remaining fourteen.

The Class of '77 numbered thirty-eight. We have biographical records of ten who are living, two did not reply to inquiry and twenty have died, of which number we have biographical records of seven and only notice of death of thirteen. We have no records of the remaining six.

The Class of '87 numbered thirty-seven. We have biographical records of thirty-two. Five have died of which number we have biographical records of three and only notice of death of two.

The Class of '97 numbered sixty. We have biographical records of fifty-three. Three have died and we have biographical records of each. We have no records of the remaining four.

NECROLOGY.

Israel Buckbee ('41), at Fonda, N. Y., April 25, 1906.

John Campbell ('43), at Cold Spring, N. Y., December 25, 1905.

E. Howe Davis ('54), at Elmira, N. Y., November 3, 1906.

Henry E. Babcock ('55), at New London, N. Y., August 18, 1906.

Samuel J. McDougall ('57), at Boston, Mass., February 8, 1907.

George W. Draper ('58), at Syracuse, N. Y., June 8, 1906.

E. Collins Blaisdell ('58), at Quincy, Ill., December 22, 1905.

George H. Spafford ('59), at Cavendish, Vt., June 18, 1906.

George H. Thoma ('64), at Reno, Nev., January 31, 1907.

William A. Bliss ('66), at Brooklyn, N. Y., August 19, 1906.
 John N. Wright ('68), at Grand Gorge, N. Y., December 21, 1906.
 Isaac G. Wheeler ('74), at Buffalo, N. Y., May 22, 1906.
 Luther B. Newton ('74), at North Bennington, Vt., May 2, 1906.
 Charles G. Bacon ('74), at Fulton, N. Y., August 18, 1906.
 Luther E. Hawkins ('77), at Brushton, N. Y., October 11, 1894.
 William D. Walradt ('78), at Albany, N. Y., September 6, 1906.
 George H. Van Wagner ('81), at Wappingers Falls, N. Y., March 19, 1907.

Reynaldo J. Fitzgerald ('82), at Minneapolis, Minn., August 18, 1906.
 James Carr ('86), at New York City, December 19, 1905.
 James E. Smith ('89), at Albany, N. Y., August 15, 1906.
 John C. O'Haire ('91), at Watervliet, N. Y., June 16, 1906.
 James E. Kelley ('01), at Saratoga, N. Y., May 14, 1906.
 Floyd D. Michael ('06), at Lasellsville, N. Y., October 29, 1906.

Respectfully submitted,

E. E. HINMAN, *Historian, A. M. C. A. A.*

HISTORY OF THE CLASS OF 1847.

FREDERICK C. ADAMS. Died September 22, 1862. No other record.

THOMAS S. AVERY. Died soon after graduation of typhoid fever at Rochester, N. Y.

HIRAM BARBER. After graduating settled at Chesterville, N. Y. In 1848 was elected a member of the Legislature. Remained in Chesterville until 1853 when he removed to Richview, Ill. There he had a very large and successful practice. In 1863 he moved to Washington, D. C., in the service of the government with the Christian Commission and devoting a large part of his time to hospital work. In 1871 opened an office in New York City and in 1874 was appointed surgeon to the Park Department, holding that office for three years. In 1880 was appointed physician and surgeon to Sing Sing Prison, which position he held when he last replied to inquiries, 1897. No further record.

CHARLES R. COOK. No record.

GEORGE T. FOSTER. Died at Pittsfield, Mass., October 22, 1890, aged 80.

DAVID FRASIER. Died at Cobleskill, N. Y., August 2, 1894, aged 74.

JOSIAH H. HELMER. Died at Theresa, N. Y., August 20, 1904, aged 83 years. He reported for his class in 1887 and again in 1897. After graduation he practiced in a small town in Jefferson county, N. Y., for five years, after which he removed to Lockport, N. Y., and was for some time in partnership with Dr. S. T. Clarke. Dr. Helmer afterward retired from active practice and engaged in business. Detailed account of his life and some of his writings will be found with his class records.

JOHN S. HERRICK. Deceased. No other record.

J. H. HOLMES. Deceased. No other record.

DAVID H. HOLSAPPLE. No record.

ABIJAH T. HUDSON. One of the oldest practitioners of California, died at his home in Stockton, Cal., February 5, 1902, aged 82 years. He had

been in poor health for some time and his death was not unexpected. He began his practice in the State of Iowa when the war broke out, and he took a deep interest in the organization of volunteers during 1861 and 1862. When the disastrous second battle of Bull Run was followed by the advance of Lee's army into Pennsylvania he offered his services and was commissioned as surgeon to the 26th Iowa Infantry, remaining in the service until he was honorably mustered out at Washington, June 6, 1865. Soon after the close of the war he removed to California and settled in Stockton in 1867, where he resided until his death, practicing his profession almost to the day of his death. He was elected to the State Senate for two terms, and for years took a prominent part in politics. Details of his army service will be found with his class records.

HENRY HUNTINGTON. No record.

A. HUBBLE KOON. He died some time in 1862 of paralysis. His disease was the result of a life of dissipation. While devoted to the study of medicine, a life of ease and indulgence finally brought him to an early death.

SETH W. LANGDON. Died March 24, 1891.

HEZEKIAH LEONARDSON. Practiced for a few years immediately after graduation at Burnt Hills, N. Y. He was there in 1887, but we can get no record after that time. Is reported to be dead.

GEORGE P. LIVINGSTON. Died at Clyde, N. Y., December 22, 1888, aged 64.

HENRY B. MCHARG. No record.

JULIUS F. MINER. Began practice at New Baintree, Mass., remaining there for five years, and afterwards for three years in Winchester, N. H. In 1855 he located in Buffalo, N. Y., where he remained until his death, November 5, 1886.

ORVILLE H. MOTT. Died at Schuylerville, N. Y., soon after graduation.

PETER ONDERDONK. No record.

DAVID PANGBURN. No record.

GILBERT RICHMOND. No record.

CARMAN C. SAUNDERS. No record.

BENJAMIN A. SHELDON. No record.

FREDERICK A. SMITH. No record.

JOHN P. WALLACE. Died at Lansingburg, N. Y., in 1850 of consumption.

JOHN W. WARNER. Began practice at Minersville, N. Y., but after six months removed to New York City, where he was in 1897. He has since been reported to be living in Saratoga, N. Y.

FELIX WEIDMAN. Died September 10, 1895.

DAVID WILTSE. No record.

Respectfully submitted,

E. E. HINMAN, *Historian, A. M. C. A. A.*

HISTORY OF THE CLASS OF 1857.

WILLIAM G. ALLEN. Located immediately after graduation at Mansfield, Mass., where he resided and practiced until his death, April, 1903. He always did a large business and was eminently successful. He was married and had one son, who succeeded him in his practice.

JAMES D. BENTON. Was known to be practicing at Cato, N. Y., in 1887. Since then we have no record.

MATTHEW R. CARSON. After serving for a year as interne at the Albany Hospital he located at Canandaigua, N. Y., where he is still in active practice. He has served as president of the county society and on the Pension Board. He is married and has three sons and two daughters.

GEORGE H. CHADWICK. Practiced at Portland, Me., until February, 1888, when he died.

ADAM H. COCHRANE. Was located at San José, Cal. Died April 8, 1895.

LEWIS COON. Died August 16, 1884. No other record.

SAMUEL CRAWFORD. No record.

GEORGE S. DEARBORN. Reported in 1897 that he was in active practice at Rockaway, N. J., where he was meeting with success. He was assistant surgeon of the 15th Regiment, N. J. Vols., and was in service over three years. He died at Rockaway, March 26, 1906, aged 71 years.

D'ESTAING DICKERSON. Practiced at Watertown, N. Y., for the first four years and then became surgeon to Sing Sing Prison. On the breaking out of the Civil War he entered the service and remained there until the close of the war. In 1865 located at Kansas City, Mo., where he remained until his death, May 3, 1902. For complete biography, see class file and proceedings of 1897.

JOHN DIRKER. No record.

GEORGE C. DOUGLASS. Died January 28, 1896, at Anaconda, Mont.

THOMAS B. DRAKE. No record.

ROBERT E. ENSIGN. Is still in practice at Berlin, Conn., where he has spent all of his life. Was assistant surgeon, 6th Conn. Vols., during the war; has been treasurer and superintendent of public schools; served a good many years as health officer and coroner; has been a member of the Legislature and now is the official medical examiner of his town. He is married and has several children.

AUGUSTUS G. GOSS. Died May 5, 1879. No other record.

JOHN GRANT. No record.

LANSING GRIFFIN. Practiced for a few years at least at Binghamton, N. Y. Died at Elmira, N. Y., November 12, 1894. No other record.

Z. G. HARRINGTON. Immediately after graduation located at Westan, Vt., and continued there until 1862, when he formed a partnership with Dr. L. G. Whitney of Chester, Vt. There he had a successful practice until 1872 when he removed to Mankato, Minn., where he is at the present time actively engaged in practice. In the spring of 1899 he went abroad with his wife, spending a year and a half in the medical centers of Europe and visiting Palestine, Egypt and other places of interest. He is also interested in the banking business and is president of the Mankato National Bank, spending a portion of each day there. He was prevented from attending the "Golden Anniversary" of his class by reason of a broken leg, which recently caused him to retire from work for a few weeks.

NEWTON C. HARRIS. After graduation located at Schuylerville, N. Y. He served as surgeon during the Civil War which greatly impaired his health. He developed a very successful practice, was prominently identified in public affairs of his town and especially so in the erecting of the

great battle monument of the town. Many of the inscriptions thereon are from his pen. He died August 6, 1903.

CHARLES N. HEWITT. Is still in active practice at Red Wing, Minn. He served during the Civil War, advancing to the rank of brigade surgeon. He is still in exceptionally robust health and was present at his class reunion.

EDWARD N. HOWE. In 1897 he reported from Jericho, Vt. At that time he stated that his hands were paralyzed and he was unable to write. Since then we have had no report, but can assume that he has ere now passed on to join the large number of his old class in realms where there are no calls to duty for doctors.

DANA E. KELSEY. No record.

JOHN D. KENYON. After graduation he practiced with his father at Hopkinton, R. I., where he remained three years. At the urgent request of friends he removed to Ashaway, R. I., where he lived until 1889, building up a very large practice. From 1889 until the time of his death, August 12, 1903, he lived in Westerly, R. I., leading there a busy professional life. He was married and was survived only by his son, also a physician.

FRANKLIN KIDDER. No record.

WILLIAM B. LABAW. Was located at Navesink, N. J., in 1887. No record since then.

WILLIAM S. LAYMAN. Died at Schoharie, N. Y., September 4, 1895, aged 63.

ROBERT LOUGHRAN. Practiced at Kingston, N. Y., successfully until his death, April 11, 1899, aged 64 years.

HAMBLIN B. MABEN. He first opened an office at Ilion, N. Y., where he subsequently attained a large practice. In 1864 he acted as army surgeon at David's Island Hospital. In 1883 he took a special course in gynecology at the New York Post-Graduate Hospital, since which time his work has been devoted principally to that department. June 15, 1885, he removed to Kingston, N. Y., where he soon developed a successful practice, and where he is still at work. Dr. Maben is a Democrat in politics and has held various public offices. He has been a member of the Board of Education, village trustee and supervisor of the town of German Flats. He was twice the Democratic nominee for member of Assembly; has been a member of the Broome County, Oneida County and Herkimer County Medical Societies. He has been a delegate to the State Society and the American Medical Association. He has served as president of the Physicians' Association of Kingston and as president of the Alumni Association of the Albany Medical College in 1898. He is married for the third time and has one son, also a physician.

SAMUEL J. MCDUGALL. Died in Boston, Mass., February 8, 1907, aged 76. He was a pioneer in the formation of medical societies, and it was largely through his efforts that the Massachusetts Dental Society was formed in 1864. Immediately after graduating he entered the field of dentistry, which he followed instead of medicine. He served as president of the Massachusetts Dental Society, professor of pathology and therapeutics at the Boston Dental College, was married and is survived by three daughters.

CHARLES MEAD. No record.

JOHN J. MYERS. Last known to be located in Albany, N. Y. Has disappeared leaving no record.

ISAAC B. PAYNE. No record.

JOHN E. PRICHARD. Located in Baltimore, Md., in the early eighties and remained there until the time of his death, March 1, 1899. He did a large business and for the last few years of his work had a son associated with him in practice. He served through the Civil War and never fully recovered his health.

GEORGE W. SARGENT. Was located at Lawrence, Mass., where he died January 1, 1893.

BENJAMIN F. SMITH. Died at Mount Upton, N. Y., where he had practiced for the greater part of his life, February 22, 1895.

HORACE SNYDER. Was last known at Richfield, N. Y. Did not reply to inquiries.

CHARLES L. SPENCER. Died July 30, 1883. No other record.

HENRY SPERBECK. He was located in 1887 at Charlotteville, N. Y. His death was reported at Richmondville, N. Y., October 19, 1895. No other record.

CHARLES H. SPRING. Died at Boston, Mass., December 9, 1887.

JOHN H. STEVENS. Located at Monlour, Iowa, in 1859; went into the army as assistant surgeon in 1862; returned to Monlour in 1876 and opened a drug store which he kept up until 1886. He then spent four years on a farm and again returned to the army. His home is now Rogers, Ark., but he is at the present time spending a short time at Bentonville, Ark., for his health.

E. P. STUBBLEFIELD. No record.

LORENZO TRAVER. Began practice in July, 1857, at New Bedford, Mass., where he remained until November 22, 1861, when he entered the navy as an assistant surgeon, and he served faithfully during the whole war, resigning October 18, 1868. He then took up practice in Providence, R. I., where he died October 24, 1903. He was a member of all of the leading fraternal organizations as well as his County and State Medical Societies. He was married and had four children. Detailed account of his life and war service is filed with his class records.

THOMAS S. VIRGIL. No record.

HENRY D. WELLS. Is in active practice at Middleburgh, N. Y., where he has had an extensive practice for a good many years. He is an active worker in church affairs and an ardent supporter of the Prohibition party. He attended the reunion of his class this year and is its historian.

W. A. WHEDON. No record.

HUGH MCG. WILSON. Was last known to be at Detroit, Mich. No record otherwise.

IRA WOODWARD. Deceased. No other record.

JOHN YAUNEY. Died at Ephratah, N. Y., July 24, 1905.

Respectfully submitted,

HENRY D. WELLS,

Historian, Class '57.

HISTORY OF THE CLASS OF 1867.

No report has ever been made of the members of this class. Our information, therefore, is meager, for many of the class have never reported or communicated with us since leaving the College.

XYRIS T. BATES. Died January 2, 1899, at Poughkeepsie, N. Y., aged 59.

JAMES D. BRAGG. Last known at Bridgeport, Conn. No other record.

JAMES R. COLBY. Dead. No other record.

D. HENRY COOKE. No record.

NATHAN G. DAGGETT. Died at Schenectady, N. Y.

EDWARD J. DAVIS. No record.

ISAAC C. EDSON. Spent nearly all of his life after graduation in Windsor, N. Y., where he practiced, prospered and grew into the hearts and affections of the people of that section until his death, which occurred February 23, 1905, at the age of 81 years. He was married and was survived by his wife, a son and daughter.

GRENVILLE A. EMORY. Is at Middletown, N. Y. Did not reply to inquiry.

JACOB F. GETMAN. Died July 21, 1889, aged 47.

HORATIO GILBERT. Located at Hornell, N. Y. Did not reply to inquiry.

EDWIN HAINES. Died March 19, 1896.

CHARLES S. HARD. No record.

GILES S. HULETT. Located at Arcade, Wyoming. Did not reply to inquiry.

GEORGE P. JOHNSON. Died July 17, 1904, at Mexico, N. Y.

GEORGE A. JONES. Died 1875.

HERBERT JUDD. Died January 11, 1894, at Galesburg, Ill.

WILLIAM M. LAWLOR. Last located at San Francisco, Cal. Did not reply to letter of inquiry.

CHARLES LONG. Is located at Altoona, Pa.

STEPHEN McLALLIN. No record.

JACOB L. MILLER. No record.

WILLIAM H. NICHOLS. Located in the village of West Sand Lake, N. Y., January, 1868, and has enjoyed a good practice until about five years ago when his health gave out and he was forced to retire from active work. He was married in 1870 and has three children. One son has now assumed charge of his father's practice and is doing well.

DAVID NORWOOD. After graduation located at Esperance, N. Y., where he is at present still in the harness, but trying now to give it up and devote more time to fishing. He is a member of the County and State Societies, health officer, and has been U. S. Pension Examiner for the past eleven years. Is a widower, has one son.

BENJAMIN W. NOXON. Died February 21, 1885, at Ballston, N. Y.

JAMES H. REED. No record.

JAMES B. ROUSE. Graduated from the Albany Medical College in 1867 and from the Long Island College in 1868. Began business at Freehold, N. Y., in 1868, but remained there only a few months. From there he moved to Leeds, N. Y., and from there, in 1869 to Wyckoff, N. J. After two and a half years at the latter place he moved to East Durham, N. Y., but owing to

ill health remained there only two years and then gave up work for two years. In the fall of 1876 he returned to Leeds, where he has been in active practice ever since except for two years. In July, 1889, he went to Peru, South America, under a two years' contract with the London & Pacific Petroleum Co. and returned in July, 1891. Has been successful and is in good health.

JAMES F. SHURTLEFF. Located at South Middleboro, Mass. Did not reply to inquiry.

CHARLES J. SIMONS. After graduating went to his home in Massachusetts and married. He then located in Chicago, Ill., and had the usual ups and downs of a young doctor, but soon established himself. He now resides at 4421 Indiana avenue; has been married three times.

CHARLES W. STRATTON. Died at Lee, Mass., February, 1886.

WILLIAM D. SWAIN. Began practice at Copake, N. Y., in 1868 and has had the ordinary experience of a country practitioner. Withdrew from active work in 1905, confining himself to office work only. Is married and has one son, also a physician, Dr. Howard T. Swain, of Boston, Mass.

GEORGE TILDEN. Located at Omaha, Neb., soon after graduation, where he has been in continuous practice ever since, although at the present time he is doing but very little work owing to failing health. Is married and has had two children, both of whom are dead.

ADOLPHUS L. TREMBLY. No record.

JAMES L. WENTWORTH. Died December 18, 1876.

ALVIN D. WHELOCK. No record.

JOHN V. WINNIE. Began practice in Sidney, N. Y., soon after graduation and is still there in active practice. Has always been a Democrat and taken active part in Masonic affairs. Is a member of the County and State Societies, is married and has one daughter.

CHARLES M. WOODWARD. Died in 1897.

Respectfully submitted,

W. H. NICHOLS,

Historian, Class '67.

HISTORY OF THE CLASS OF 1877.

DORMAN BALDWIN. Was last known to be practicing at Jamestown, Dakota. Has never replied to inquiries.

JAMES F. BARKER. Is practicing in Albany, N. Y., where he has spent all of the years since his graduation, and has acquired a very extensive general practice. He is married.

FRANK P. BLAIR. In March, 1878, he located at Barton, N. Y., where he remained eight years, meeting with success. In June, 1886, he removed to Allegany, N. Y., and acquired a good general practice. He died at Olean, N. Y., May 23, 1904.

JOHN E. COLBURN. Was last known to be in Chicago, Ill. Has never replied to inquiries.

JESSE CROUNSE. After receiving his diploma he located at Altamont, N. Y., where he has remained and is now actively engaged in general

practice. He has served for several years as president of the Board of Education and was president of the village for the past two years.

JOHN CROWLEY. Died August 27, 1879. No other record.

ROBERT J. CULLEN. Deceased. No other record.

EZEKIEL H. DAVIS. Deceased. No other record.

HORACE B. DE LA MATER. He engaged in practice with his father at Duaneburgh, N. Y., but died from consumption July 9, 1879.

WILLIAM E. DOLAN. Died at West Troy, N. Y., June 9, 1884. No other record.

WILLIAM J. DONALD. Shortly after graduating located at Mount Vernon, Wis., remaining there until February, 1880, when he moved to Tunnel City, Wis., his present residence. He soon became disabled through an inflammation of the knee joint and now only retains an office practice. Since 1884 he has had charge of a general store and later a department store, handling mainly the wares sought for by a farming community. In September, 1906, he sold out this business and is now manufacturing and selling a crutch attachment, an article which he devised, and also deals in crutches and allied articles.

ALOIS DONHAUSER. After graduating entered the army signal corps. In 1887, when reporting, stated that he was then located in the chief office of that department at Washington, D. C. He never practiced medicine, but always took an interest in it and kept posted through the medical journals. He was married and had one child. He died January 13, 1890, aged 36.

WILLIAM H. EDSALL. Was last known to be at Highland Falls, N. Y. He died February 9, 1901, of pneumonia, aged 49. No other record.

THOMAS R. FEATHERSTONHAUGH. Practiced in Albany and New York for a few years and then in the interest of his health removed to Washington, D. C., where he became connected with the Pension Department as a medical referee, which position he still holds. He does not practice, but gives considerable time to literature and science.

JOHN E. HALL. Died November 3, 1886, of pneumonia. No other record.

JAMES T. HARD. After graduating located at Ames, N. Y. In 1878 he moved to Sharon Springs, N. Y., practicing there until the fall of 1891, and then removed to Sunbury, Pa., where he is still located. He is now serving on the medical staff of the Packer Hospital there. He is married and has a son and daughter.

LUTHER E. HAWKINS. After a year of country practice he moved to Brushton, N. Y., where he soon secured a good business, remaining there in practice until the time of his death, October 11, 1894, after about a year's sickness.

JAMES C. HEALEY. Died, Albany, N. Y., March 30, 1891. No other record.

J. ASHBEL JOHNSON. Last known to be at Chateaugay Lake, N. Y. No replies to inquiries.

ARTHUR G. KENNEY. Died at Troy, N. Y., June 27, 1896, aged 44. No other record.

RUSHMORE LAPE. Is in general practice at Fair Haven, Vt., to which

place he moved after a few years of practice at West Sand Lake, N. Y., in partnership with Dr. W. H. Nichols of that place. He has served as the president of his County Society, is active in church work and a member of the Masonic fraternity. He was for nine years trustee of the Fair Haven Graded School, is married and has three children, one a physician.

MAURICE J. LEWIS. After serving a term as interne at the Albany Hospital, he spent a year and a half in Europe and then returned to open his office in Albany. Here he remained until about 1893, going to New York City, where he is at present. During the greater part of his residence in New York he has given all of his time to the service of the State in the capacity of secretary to the State Board of Medical Examiners, a position which he has filled with honor to himself and great satisfaction to the entire profession of the State.

DAVID H. LOWN. After a year of post-graduate study he settled in Rensselaer, N. Y., but he has never practiced, having studied medicine merely for the sake of study and pleasure. He devotes his time to his farm and evidently lives the life of a country gentleman.

MARK M. LOWN. After graduation settled at Poughkeepsie, N. Y. On account of failing health he then went to the Adirondacks and located at Richville, N. Y.; then was offered the position of surgeon to the H. R. O. & I. R. R. near Hudson, N. Y., where he remained four years and then removed to Findlay, Ohio. He has since again moved, and this time to Rhinebeck, N. Y., where he is at present.

FREDERICK DEL. MANDEVILLE. No record.

CHARLES MCCULLOCH. After graduation settled at Central Bridge, N. Y., remaining there until June, 1893. He then moved to Gloversville, N. Y., where he remained until the time of his death, which took place October 15, 1898. During his life he was a member of the staff of the Littauer Hospital at his late home and also a member of the Masonic fraternity and an Odd-Fellow. His wife and four children survived him, one of his sons having succeeded him in his practice just before his death.

JOHN S. O'HARA. Died July 1, 1883. No other record.

GILBERT S. OLIN. Last known at Meredith Hollow, N. Y. No reply to inquiries.

ALEXANDER J. PEETS. First settled in Allegheny City, Pa. He spent eighteen months there and a good deal of money, but became discouraged about practice. He then went to New York City and settled near "Five Points." Later he moved uptown and developed a good practice. He devised an improvement upon the Otis urethrotome, a description of which can be seen in the *New York Medical Journal* of May 15, 1886. He has later been reported as living at 1101 Cortelyou Road, Brooklyn, N. Y., but did not reply to inquiry.

CLARENCE J. PEETS. Settled in Granville, N. Y., where he was very successful as a general practitioner. He died of pneumonia November 18, 1883, leaving a wife and one child.

SANFORD C. ROE. Last known at Canoga, N. Y. No reply to inquiries.

SELWYN A. RUSSELL. After graduation he spent two years as interne at the Albany Hospital, and then until 1883 on the staff of the Utica State Hospital. The next year he spent in Europe, returning in 1884 to Albany,

where he entered into partnership with Dr. Ward, and afterward opened an office of his own on Lancaster street, where he continued until 1888, when he made a circuit of the world. In January, 1891, he accepted a position as first assistant at the Hudson River State Hospital at Poughkeepsie, N. Y., filling it for nearly two years, but was obliged to resign on account of poor health. He continued there in practice until the time of his death, January 10, 1906.

GEORGE A. SLOAN. Located at Westford, N. Y., immediately after graduation, where he developed a good practice, but when he reported in 1887 he was not in good health. He was at that time married and had one child. He has never reported since.

HORACE T. SPRAGUE. Died August 16, 1891. No other record.

EDWARD V. STRYKER. Last known at Westfield, N. J. Has never replied to inquiries.

HENY A. WALDRON. In 1887 Dr. Featherstonhaugh reported: "I have seen Waldron off and on at intervals since we graduated. He has never practiced. When I last saw him he was spending the summer at one of the Hudson river towns near New York (probably Newburg)." We have no further record.

JAMES WARWICK. Located in Troy, N. Y., and practiced until 1884, when he went to England for two years. On his return he practiced in Boston, Hudson and Worcester, Mass., remaining at the latter place twelve years. In 1900 he moved to Clinton, Mass., where he is at present. He is now 64 years old, in fairly good health and doing a little office practice.

Respectfully submitted,

JAMES F. BARKER,

Historian, Class '77.

HISTORY OF THE CLASS OF 1887.

EUGENE M. AUSTIN. Located immediately after graduation at Tupper Lake, N. Y., where he is still in active practice.

JAMES H. BISSELL. Is located in Troy, N. Y., where he is very closely engaged in general practice, giving special attention to general surgery. Is assistant surgeon to the Troy City Hospital.

CHARLES M. BRADLEY. First located at Decatur, Ill., but is now doing general practice at Genoa Junction, Wis.

WILLIAM W. BROGA. Last known to be in practice at Springfield, Mass. Did not reply to letter of inquiry.

HARRY T. BROOKS. Is living at New Rochelle, N. Y., but spends much of his time in New York City, where he has been appointed to the medical boards of several hospitals. He was appointed adjunct professor in the New York Post-Graduate School and Hospital in 1897.

PETER G. COTTER. First located at Yuma, Arizona, where he remained until January, 1903, with the exception of three months spent in New York doing post-graduate work during the fall of 1901. In January, 1903, after fifteen years of hard work in Arizona, realizing that the extreme heat of the summers, together with the hard work, were making inroads upon his

health, he spent a year in travel and study and then located in Los Angeles, Cal., where he is now enjoying excellent health and a lucrative practice.

CORNELIUS W. DEBAUN. First located at Fultonville, N. Y. Has been in practice in Fonda, N. Y., since 1888 and has been fairly successful.

F. M. DRURY. First practice was in Broadalbin, N. Y., from which place he removed ten years ago to Gloversville, N. Y., and is enjoying a good practice.

ROBERT E. FIVEY. Is practicing at 129 West 126th street, New York City.

ELMER L. FLETCHER. First located at Glens Falls, N. Y., but after a year removed to Augusta, Wis. In 1901 sold out his business and located at Eau Claire, Wis., doing eye, ear, nose and throat work only.

MARCUS DE LA FRENCH. First located in North Colesville, N. Y. After practicing there seven years he removed to West Chazy, N. Y., only to move again, after six months' practice, to Lebanon, N. Y., where he died January 9, 1907. He was very successful in his work and was the health officer of his town.

W. I. GORDON. First practiced in Copake, N. Y., until 1896. Is living in Cleveland, Ohio, absolutely happy in working for the foundation of a school that is giving a scientific training in the art of healing.

JOHN HEATLEY. First settled in Schenectady, N. Y., of which city he was city physician for two years and also county physician for the same length of time. Is now a member of the staff of Ellis Hospital and the Children's Home. Was married to Miss Julia C. Peterson, of Schenectady, September 19, 1900.

ARTHUR W. JOHNSON. After graduation entered service at the New York Skin and Cancer Hospital, at the same time assisting at the Bellevue Dispensary and attending the clinics at the Post-Graduate. After the expiration of his service, spent one year as surgeon on one of the ships of the United States and Brazil Steamship Co.; traveled two years in the western states and then located for a short time at Hulberton, N. Y., and afterwards for six months at Saratoga, N. Y. He then formed a partnership with his father at Greenfield Center, N. Y., where he remained two years. His next location was Mechanicville, N. Y., where he is now doing a successful business. In 1894 he married Miss Katherine Sturtevant of that town, who died in 1900 and he has never again married. Has been coroner for nine years, has enjoyed also a number of Masonic honors.

EUGENE M. JONES. Located at Grafton Centre, N. Y., where he remained for several years, when he removed to Petersburg, N. Y. He soon returned to Grafton, where he died in 1903, after having built up a good business.

OWEN F. MCAVENUE. Was seen in 1897, when he reported that he was in practice and doing well. Was last reported aboard of a U. S. transport at San Francisco, Cal.

WILLIS G. MACDONALD. Has remained in practice in Albany N. Y., ever since his graduation, and during the past ten years has confined his practice to surgery and surgical gynecology. Is professor of clinical and abdominal surgery at the Albany Medical College, attending surgeon to the Albany Hospital, and is consulting surgeon to a number of hospitals situated in smaller cities of New York and Massachusetts.

ANDREW MACFARLANE. Is located in Albany. Is visiting physician to

St. Peter's and the Child's Hospitals and clinical professor of physical diagnosis at the college. Has been abroad for post-graduate study twice and now gives special attention to diseases of the stomach and intestines.

GEORGE H. McMURRAY. Practiced for at least ten years at Glens Falls, N. Y., and was prosperous. He died July 12, 1901, aged 36.

WEBSTER MILLER. Located at Stockbridge, Mass., after graduating, where he is still busy, although he is greatly handicapped by poor health. He is married and has one child.

CHARLES H. MOORE. After graduation spent the first two years in Albany in general practice. In 1889 entered the office of Dr. C. S. Merrill, of Albany, N. Y., doing eye and ear work exclusively, which association still continues. He is married and has had two children, one of whom lived only a year.

H. F. C. MULLER. Shortly after graduating located at Rensselaerville, N. Y. After about four years he moved to Brooklyn, N. Y., where he had a flourishing practice, but illness compelled him to stop work for a time and he has since returned to Rensselaerville, where he is doing well.

HERMAN V. MYNDERSE. Is in practice in Schenectady, N. Y., and very successful.

CLARENCE M. PAINE. Began practice at Atlanta, Ga., February 5, 1889. He is still there doing general work and very busy. He is married and has two children.

GEORGE F. PALMER. Very soon after graduation he developed tubercular disease, but soon recovered and took up practice with his father and showed unusual ability, especially in surgery. In 1895 he went to California, intending to make that his home, but the fatigue of travel and the great change of climate were too much for him and he died very suddenly and unexpectedly, December 21, 1895.

ROBERT J. PALMER. After graduation located at Hagamans, N. Y. Located at Gloversville, N. Y., in 1888 and has been there ever since. He has been health officer, city physician and coroner and is a member of the staff of the local hospital.

JOHN S. PHILLIPS. Died August 6, 1896, at Gloversville, N. Y.

HENRY J. POTTER. Has always practiced at Bennington, Vt., where he has prospered.

HENRY Z. PRATT. For the first five years of work conducted a private sanitarium at Rensselaer, N. Y., for the care of nervous and chronic diseases. He is now practicing in New York City at No. 400 West 145th street.

JAMES E. SADLIER. After serving eighteen months at the Albany Hospital he located at Poughkeepsie, N. Y., where he remained and is now doing a good surgical practice. Was married in 1891.

GEORGE K. SMITH. Was last known to be in Richmondville, N. Y., but has never made any response to letters of inquiry.

FRANCIS W. ST. JOHN. After graduation located at Batchellerville, N. Y., remained there six months and removed to Eagle Mills, N. Y. From there, after one year of work, removed to East Galway, N. Y. In January, 1891, he again moved, and this time located at Charlton, N. Y. In 1906 he moved to Westport, N. Y., where he is at present. He is

medical editor of the *Philadelphia Farm Journal* and has been president of the Saratoga County Society.

CHARLES VAN WERT. Soon after graduation settled at New York City where he is still, residing at 123 West 97th street. He is doing a successful business, is married and has two children.

THOMAS H. WILLARD. After graduation remained at the Albany Post-office as assistant postmaster until 1889, practiced in Albany for a little over a year, and in September, 1890, removed to New York to accept the position of medical director of the Metropolitan Life Insurance Co., where he is now located. Is married and has one child, a son.

HENRY C. YOUNG. Is located at Hagaman's Mills, N. Y., but has never made any response to letters of inquiry sent to him.

Respectfully submitted,

JAMES H. BISSELL,

Historian, Class '87.

HISTORY OF THE CLASS OF 1897.

IRA APPLEBEE. Is doing general practice in Albany, N. Y., where he has been ever since graduation. He is married but has no family. Is now the surgeon to the fire department. Is a member of the County and State Societies and the American Medical Association.

THOMAS J. ARUNDEL. Is located at Youngstown, Ohio. Did not reply to inquiries.

EUGENE W. BALTES. Whereabouts unknown. Letters to various reported addresses returned.

HARRY E. BATTIN. After graduation spent two years in hospitals in New York City. Following this, located at Schenectady, N. Y., for two years. In 1901 removed to Corning, N. Y., where he is now. Married Miss Helen Callanan in 1899 and has three children.

JOHN J. BEARD. After graduation located at Carlisle, N. Y., and remained there until April, 1898, when he removed to Sharon Springs, N. Y., remaining there until October, 1900. He then moved to Gloversville, N. Y., and formed a partnership with Dr. Hagedorn, who was in poor health. This association continued until May 1, 1906, when, Dr. Hagedorn having recovered his health, the partnership was dissolved. He is obstetrician to the Littauer Hospital, a member of the Johnstown and Gloversville Medical and Surgical Society, the County and State Societies and the American Medical Association. He is married and has two daughters.

EDWARD W. BECKER. After graduation did post-graduate work in New York until the fall of 1898. Was then interne at the Samaritan Hospital of Troy, N. Y., for eighteen months, after which he opened his office in Troy, N. Y., where he has been ever since. He is now assistant attending physician to the Samaritan Hospital; assistant to Outdoor Nose and Throat Department, Samaritan Hospital; rhinologist and laryngologist to the Troy Orphan Asylum; instructor in physiology, Albany Medical College, and assistant surgeon, Company D, 2d Regiment, N. Y. N. G.

CHARLES H. BENNETT. Located at Auburn, N. Y., but did not reply to letters of inquiry.

EDWARD N. BIBBY. After graduation, was located for five years at Middlebury, Vt., and then removed to Fair Haven, Vt. After about three years' practice he again moved to Craftsbury, Vt., where he is now located and doing well.

HERBERT O. BRUST. In the spring of 1897 took Civil Service examination and was placed upon the list of eligibles for state hospital service. In the fall of 1897 he located at Newcomb, N. Y., a small town in the Adirondacks. He remained there two years, studied in New York during the winter of 1899 and then located in Syracuse, N. Y., where he is at present. Is married and has one boy.

CHARLES G. COLE. Is practicing at Binghamton, N. Y., where he has been ever since graduation. Is doing general practice with good success. Is married and has one boy.

JOSEPH G. COLEMAN. First located at Lafayette, N. J., in October, 1898, remaining there until May, 1900, when he removed to Hamburg, N. J., where he is at present. Is married and has one son. Is a member of the New Jersey State Medical Society, a member of the Masonic fraternity, an examiner for a number of life insurance companies. He has served three years on the Board of Education and two of these was as president. Has served one year as town physician.

SANDERS P. CORNELL. After leaving college, located at Sidney Center, N. Y., where he is at present, doing general work. Is married and has one daughter.

WILLIAM C. CUTHBERT. Located at Sandy Hill, N. Y., immediately after graduation, where he has remained. Is doing a successful general practice, is married but has no family.

ROBERT C. DAVIES. Remained at home during the summer of 1897 recuperating from an attack of typhoid. Moved to Middle Granville, N. Y., and remained there until 1902, when he again moved, locating at Granville, N. Y. He is a member of the County and State Societies and the American Medical Association. Is married and has one son.

JOHN W. DEANE. Began practice immediately after graduation at Hartford, N. Y. Remained in general practice until December, 1905, at which time he was elected resident surgeon to the New York Eye and Ear Hospital. He has served three years as health officer of his town. In 1905 was delegate to the New York State Medical Society. He completed his service at the Eye and Ear Hospital in December, 1906, and is now doing post-graduate work in that department at Vienna. He expects to locate, upon his return from abroad in September, 1907, at Glens Falls, N. Y., to do eye, ear and throat work only.

ROBERT L. ELLITHORPE. In the summer of 1897 located at Johnstown, N. Y. The following year was appointed health officer and city physician, which office he held five years. He represented the city department of health at the meeting of the American League of Municipalities in 1899, and has always attended the conferences of health officers of the state. In January, 1903, removed to Gloversville, N. Y., and entered into a partnership with Dr. Nelson Everest of the class of '81, which was terminated

in 1905. Is a member of the County and State Societies, a Mason and an Elk.

CALVIN EMERICK. Is located at Glasco, N. Y., but did not answer letters of inquiry.

JOHN H. FALLON. After graduation spent the summer of 1897 on the Hudson River Day Line Steamer "Albany" and the following winter was house physician at the Saratoga Hospital. Began practice in April, 1898, at Lansingburg, N. Y., and remained there until January, 1902, when he removed to Schenectady, N. Y., where he is meeting with considerable success. He is married and has one daughter.

WILLIAM L. FODDER. After graduation served one term at the Ellis Hospital at Schenectady, N. Y. He then saw service in the Spanish-American War, being stationed at Atlanta, Ga. Returning home with impaired health, he did not resume practice until November, 1899, when he opened his office in Schenectady and is still there. He is married and has one boy.

EDWARD L. GAUS. Is associated with his father, in Albany, N. Y., in the drug business.

REV. JOHN GIFFEN. Has remained in Albany since graduation. He is the superintendent of the Albany City Tract and Missionary Society, which looks after the spiritual and physical needs of the poor. He also has a good private practice.

WALTER S. GRAHAM. Was located in Troy, N. Y., for three years, but in 1900 left there and has been in New York City ever since. He gives his attention to genito-urinary diseases and is doing well.

FREDERICK H. GREENE. Following graduation he practiced with his father for a few months and then located at New Paltz, N. Y., where he remained nine years. He was health officer and county physician for four years. Removed to Poughkeepsie, N. Y., in 1906 and is there at present. Was married in 1898 to Miss Ethel Emerick of West Camp, N. Y., a sister of Calvin Emerick, '97.

LEWIS T. GRIFFITH. Sailed for Europe a few days after graduation and spent a year in Munich. He then returned and entered the medical service of the army and served five years. He was stationed at Honolulu and three years in the Philippines. After leaving the army went to Dresden, Germany, and became an interne in Leopolds Frauenklinik. He spent six months there, after which he settled in the city of New York. Is unmarried.

WILLIAM C. GRISWOLD. For four and a half years led the life of a country doctor at Nassau, N. Y. He then disposed of his practice to Dr. Fred Smart, '99, and went to New York, where he served a six months' course at the New York Polyclinic. Was appointed an assistant surgeon in the U. S. Army, entering the service May 8, 1902. April 14, 1902, he agreed to support Miss Helen R. Stout of Albany for the rest of her natural life, and so far has been successful. Went to San Francisco May 14, 1902, thence on Army transport to the Philippines. From Manila went to Tacloban, thence to east coast of Samar, thence to Tubig, where he remained five months. From there he went to Santa Rita, where he had the care of a company of U. S. Infantry and a company of native scouts. June 1, 1904, he was ordered back to the states where he soon left the

service to practice in Brooklyn. While there he took a course in diseases of the nose and throat. Later was offered a post in the army again and accepted. He is now located at Fort Du Pont, Del., which is the headquarters for the artillery district of the Delaware. He has a hospital of twenty beds and holds the record of having the least sickness of any post in the service.

FRED N. GUYER. After leaving college, served for one year at St. Peter's Hospital. After leaving that service, opened an office in Albany, N. Y., where he is now located. Was appointed health physician in 1899, which position he resigned in 1900 to accept that of inspector of contagious diseases. This office he now holds. Is an Odd Fellow, a Mason, a member of the Royal Arcanum and Modern Woodmen and the Sons of the Revolution.

EUGENE J. HANRATTA. Shortly after graduation, began practice in Watervliet, N. Y., where he is still at work. Is married and has one girl.

REUBEN L. HOWLAND. Began practice soon after graduation at Broadalbin, N. Y., and is still there doing general practice. Is married.

REUBEN H. IRISH. After a term as interne at the Albany Hospital, located for one year at Westport, N. Y. In the fall of 1899 moved to Troy, N. Y., where he has remained, doing general work. In December, 1900, was married to Miss Margaret Snape, of Wresham, North Wales, who was a graduate nurse at the Albany Hospital during his service there. He has one daughter. He is attending physician to the Leonard Hospital, district physician, and examining physician for the New York State Hospital at Ray Brook, N. Y. He is president of the Medical Society of Troy and Vicinity.

HERMAN W. KATZ. A few months after graduation located at Brooklyn, N. Y. After a three months' trial there he moved to Troy, N. Y., in which place he remained a year and then moved to New York. After practicing there five years he went again to Brooklyn, where he is now located. He is engaged in general practice, is married and has two sons and three daughters.

PETER H. KEELER. He has been located in Brooklyn, N. Y., since November, 1898, and is sharing the work that comes to the general practitioner. Is a member of the Brooklyn County Medical Society and surgeon to the Lutheran Hospital. Is married and has a son and daughter.

BUEL LATCHER. After graduation served a term as interne at the Ellis Hospital at Schenectady, N. Y., resigning to accept a similar position at the Albany Hospital. Two years later began life as a general practitioner at High Falls, N. Y. He remained there for six years and then removed to Yonkers, N. Y., where he is at present. He is assistant dispensary physician to St. John's Riverside Hospital and assistant attending physician to the Tuberculosis Sanitarium, both of Yonkers. Is married.

MARSHALL LATCHER. Spent the summer of 1897 loafing, and in January, 1898, began his service as interne at the Albany Hospital. After completing his service there, located at Oneonta, N. Y., where he is still doing general practice, giving special attention to surgical work. He is attending surgeon to the Fox Memorial Hospital, a member of the County and State Societies and American Medical Association. He is married.

FREDERICK C. LEONARD. After graduation began practice at his home in Worcester, N. Y., in association with his father, where he remained for four years preceding his father's death, and continued for two years afterward. He then disposed of this practice and took up post-graduate work at the Philadelphia Polyclinic in surgery and physical diagnosis. The following spring he located at Carbondale, Pa., where he is at present busily engaged in general practice. He is married but has no children.

WILLIAM G. LEWIS. Soon after graduating located at Schuylar, N. Y., where he is now doing general practice. Is married.

HARRY J. LIPES. Has remained in Albany, N. Y., since graduation where he is engaged in general practice, giving special attention to obstetrics and gynecology. He is head obstetrician to the Guild for the Care of the Sick, and obstetrical surgeon to the Albany Hospital. He is also clinical professor of obstetrics at the college.

FREDERICK MARKLE. Is located at Bangor, N. Y., where he has been ever since graduation. He has a good country practice and is prospering. Has been president of the County Society and is physician to the Board of Health. Is married and has one child.

LEONARD MCCLINTOCK. After graduating formed a partnership with a physician at Stamford, N. Y., which continued for a year and a half. He then opened an office at Matteawan, N. Y., where he has remained. His work is that of general practice, varied with some surgery. He is married and has three children.

EDWARD F. MCCORMACK. Whereabouts unknown.

WILLIAM C. MCCULLOCH. He has been in Gloversville, N. Y., continuously since graduation. Has been for five years a member of the medical staff of the Littauer Hospital, is married and a member of the County and State Societies and the American Medical Association.

FRANCIS J. MCKOWN. After graduating entered the Albany Hospital as interne, where he served until February when he located at Carmel, N. Y., and is still there. For the past seven years has been county physician and at present one of the coroners of Putnam county.

HARRY A. MERCHANT. Following his graduation located at Monson, Mass., and soon attained an enviable position in his profession. He was a Mason and an Odd Fellow. In January, 1901, he had the misfortune to become infected while attending a case and died of pyemia, January 25, 1901, leaving a wife and two children.

GEORGE C. MERRIMAN. Is practicing at Preston Park, Pa., but did not respond to inquiries. He saw considerable service with the army during the Spanish-American War.

JAMES J. NOONAN. Ever since graduation has been located at Cohoes, N. Y. He is married and has two children.

JOSEPH A. O'NEILL. Soon after graduation opened an office in New York and his practice was attended with success. In 1900 he entered the medical service of the army and was detailed for service at Manila, where he remained two years and a half. He then returned to the states for a short time and then again went to the Philippines and had been there about two years when he met his death during a fight with the Ladrone.

He had remained at an outpost and was attended by a guard of only twenty men. He died January 25, 1905.

ALLEN M. OTTMAN. Has been practicing at Hilton, N. Y., since September, 1897, where he enjoys a lucrative practice. He has been coroner's physician of Monroe county and health officer of the town of Parma for the past four years. Is married but has no family.

PAYN B. PARSONS. Served as assistant physician at the Northampton Asylum from 1897 until 1900. Spent the next year in Europe. He studied bacteriology under Dr. Soper and at Columbia and is now serving New York City as one of the bacteriologists. He is married.

GEORGE B. PEARSON. In October, 1897, located at Newport News, Va., where he remained in active practice until December, 1900. He then removed to Middletown, Del., and is there at present, doing general practice and having all the work he can do. He is married and has one son.

CHARLES H. RICHARDSON. After graduation remained in Albany, N. Y., for six years, being associated with Dr. Willis G. Macdonald. He then moved to Pittsfield, Mass., where he is devoting his entire time to surgery and is very busy. He is married and has two children.

GEORGE E. SCHOOLCRAFT. After serving one year as interne at St. Peter's Hospital, he located at Hartwick, N. Y., where he is reveling in single blessedness and making a good record.

WILLIAM J. SHEEHAN. Is practicing at Port Chester, N. Y., but did not reply to inquiries.

WILLIAM E. SILCOCKS. After graduation practiced in Troy, N. Y., for a few months and then moved across the river to Green Island, N. Y., where he is at present. He is assistant surgeon to the Troy Hospital and a coroner's physician of Albany county. Is married and has two children.

CLARENCE J. SLOCUM. After graduation was appointed medical interne at the Hudson River State Hospital at Poughkeepsie, N. Y. Appointed junior physician at the State Hospital at Utica, N. Y., September 3, 1900. He resigned in June, 1902, and was appointed resident physician at Dr. MacDonald's House at Pleasantville, N. Y., in July, 1902, which position he now holds. This institution was moved from Pleasantville to Central Valley, N. Y., last August. He is married.

JOHN A. STEVENSON. Immediately after graduating located at Chester, Vt., where he is still in active practice. Is married and has two girls.

GARRETT W. TIMMERS. First located at Livingston, N. Y., and then at Guilderland Center, N. Y., doing well at both places but desiring a larger town and less driving, he finally moved to Castleton, N. Y., where he is now a busy general practitioner. He is health officer and president of the Board of Health. He is married and has two children.

JOHN W. TRAVELL. He went directly to New York after graduation and engaged in general practice at 55 East 11th street, his present residence.

RICHARD VAN BEUSEKOM. Soon after graduation located at Coeymans, N. Y., where he gained a very satisfactory practice. Having concluded to take a post-graduate course in diseases of the nose and throat he sold his practice to Dr. Reid of Indian Fields, N. Y., and went to New York City. Shortly afterward he contracted diphtheria and returned to Coeymans to recuperate. Soon after this he developed appendicitis and was removed to

the Albany Hospital for operation. His previous condition was such that he had but little strength to rally after the operation and he died from a complicating pneumonia May 28, 1901.

CHARLES N. VAN DENBERGE. Settled in Schenectady, N. Y., soon after graduation and has remained there ever since. He served one term as health officer of the town of Rotterdam and one term as alderman of the city of Schenectady. He is now completing the second term as supervisor of the county of Schenectady. He is married and has one daughter.

DELBERT WILBUR. Is located at Naples, N. Y., but did not reply to inquiries.

Respectfully submitted,

MARSHALL LATCHER,

Historian, Class '97.

The next order of business being the Election of Officers, Dr. Bendell moved that a Nominating Committee of five be appointed to nominate officers for the ensuing year. The motion was carried, and President Wilson appointed as such committee: Drs. Herman Bendell, George M. Fisher, James H. Mitchell, Daniel C. Case and Frederick H. Brewer.

The Nominating Committee later, during the dinner, submitted the following report by its chairman, Dr. Bendell:

REPORT OF THE NOMINATING COMMITTEE.

For President,

THOMAS H. WILLARD ('87), New York City.

For Vice-Presidents,

JAMES E. SADLIER ('87), Poughkeepsie, N. Y.

EARL D. FULLER ('78), Utica, N. Y.

ARTHUR B. VAN LOON ('91), Albany, N. Y.

DOUGLAS C. MORIARTA ('85), Saratoga, N. Y.

ROBERT F. MAC FARLANE ('88), Long Island City, N. Y.

For Recording Secretary,

J. MONTGOMERY MOSHER ('89), Albany, N. Y.

For Corresponding Secretary,

ANDREW MACFARLANE ('87), Albany, N. Y.

For Treasurer,

ROBERT BABCOCK ('84), Albany, N. Y.

For Historian,

EUGENE E. HINMAN ('99), Albany, N. Y.

For Members of the Executive Committee (term three years),

LEO H. NEUMAN ('94), Albany, N. Y.

HENRY L. K. SHAW ('96), Albany, N. Y.

GEORGE G. LEMPE ('88), Albany, N. Y.

ARTHUR C. HAGEDORN ('92), Gloversville, N. Y.

On motion of Dr. Tucker, the Secretary was directed to cast one ballot for the names contained in the report. The Secretary then read these names and President Wilson declared the members named in the report the duly elected officers of the Association for their respective terms

THE ALUMNI DINNER.

The thirty-fourth annual dinner of the Alumni Association was held at the "Ten Eyck," on Friday evening, May 3, 1907, at nine o'clock. About two hundred and seventy were present, the largest number ever attending, including members of the Association, the guests, and members of the graduating class.

The evening was enlivened by some character burlesques by vaudeville entertainers, by a mandolin and guitar club and by the singing of the glee club of the Association. The menus were elaborate and illustrated by an etching of "The Country Doctor" and an anonymous poem with the same title. Souvenir steins showing the monogram of the Association were presented to each member. After cigars had been passed, Dr. Gordinier gave notice that at the next annual meeting of the Association an amendment will be proposed to Article IV of the Constitution that ballots for the officers of the Association may be received by mail.

The Recording Secretary, on behalf of the members of the Executive Committee, presented to the retiring president, Dr. Thomas Wilson, a Union University loving cup, appropriately embossed and inscribed. Dr. Wilson accepted the gift in a few

well-chosen remarks. Dr. Thomas Willard, the president-elect, was then called upon, and announced his acceptance of the office, and his desire to promote the best interests of the Association. He stated that thirty-nine hundred dollars had been pledged by the Class of 1887 to the College Building Fund. Impromptu addresses were also made by Drs. Vander Veer, Ward, Tucker and John Cotter, and the Association, after an exceptionally enthusiastic and most largely attended reunion, adjourned.

COMMENCEMENT EXERCISES.

The seventy-sixth commencement exercises of the Albany Medical College were held at Odd Fellows' Hall, on Friday afternoon, May 3, 1907, at three o'clock, in the presence of a large audience. Samuel B. Ward, M. D., Dean of the College, presided, and upon the stage were seated the members of the Faculty, officers of the Alumni Association and prominent citizens.

The following was the

ORDER OF EXERCISES.

Overture—"Morning, Noon and Night".....*Suppé*

Prayer—REV. J. WALLACE YOUNG

Music—TONE POEM: "Apple Blossoms".....*Roberts*

Essay—JEROME MEYERS

Music—MORCEAU: "La Lettre d'Amour".....*Stewart*

PRESENTATION OF CANDIDATES FOR DEGREE, BY DEAN WARD

CONFERRING DEGREES

BY ANDREW VAN VRANKEN RAYMOND, D.D., LL.D.

Chancellor of the University

Music—MEXICAN DANCE: "Dark Eyes".....*Moret*

Address to the Graduating Class—JOSEPH A. LAWSON, LL.B.

Music—INTERMEZZO*Bendix*

Valedictory—DAVID KIDD

REPORT ON PRIZES AND APPOINTMENTS

JOSEPH D. CRAIG, M.D.

Music—FINALE: "Petite Tonkinoise".....*Scotto*

The Graduating Class was as follows:

Charles Sanford Allen.....	Rensselaer, N. Y.
Floyd Jerome Atwell.....	Oaksville, N. Y.
George Warren Beebe.....	Johnstown, N. Y.
Joseph Lewi Bendell, A. B.....	Albany, N. Y.
Edward George Benson.....	Albany, N. Y.
Howard Philip Carpenter.....	Highland, N. Y.
William David Collins, A. B.....	Green Island, N. Y.
Erastus Corning, A. B.....	Albany, N. Y.
Marcus Denis Cronin.....	Wilton, N. Y.
Walter Thomas Diver.....	Troy, N. Y.
Joseph Lewi Donhauser, A. B.....	Albany, N. Y.
Edward Herman Frederick Frisch.....	Buffalo, N. Y.
Alfred Thomas Gabriels, A. B.....	Watervliet, N. Y.
Louis Herbert Gaus.....	Albany, N. Y.
Norman Charles Goodwin, A. B.....	Albany, N. Y.
Alfred Woodward Grover.....	Kingston, Penn.
Alejandro Buitrago Guilliod.....	New Paltz, N. Y.
Augustus Joseph Hambrook.....	Cohoes, N. Y.
Edward William Jackson.....	Little Falls, N. Y.
Dean Wardell Jennings.....	Cairo, N. Y.
Clarence Robert Kay.....	Amityville, N. Y.
Roy Charles Keigher.....	Schenectady, N. Y.
David Kidd.....	Troy, N. Y.
Richard Andrew Lawrence, A. B.....	Albany, N. Y.
Tiffany Lawyer.....	Albany, N. Y.
Jacob Henry Linden.....	Sharon Springs, N. Y.
Robert Suttentfield Lipps.....	Albany, N. Y.
James Edward Maloney.....	Albany, N. Y.
John Sears McCormack.....	Albany, N. Y.
Jerome Meyers, A. B.....	Albany, N. Y.
Zenas Van Duzen Orton.....	Northampton, N. Y.
William Clare Porter.....	Lestershire, N. Y.
Stephen John Henry Reed.....	Schenectady, N. Y.
Fred James Rice.....	Canajoharie, N. Y.
James Terrance Riley.....	Buffalo, N. Y.
Frederick Seilheimer.....	Buffalo, N. Y.
William Francis Shanley, A. B.....	Albany, N. Y.
James Joseph Shea.....	Hoosick Falls, N. Y.
William Carl Treder, Ph. B.....	Albany, N. Y.
Herbert John Wright.....	Rhinebeck, N. Y.

Dr. Craig presented the prizes. He read a report on the Vander Poel prize, endowed by Mrs. Gertrude W. Vander Poel, in memory of her husband, the late S. Oakley Vander Poel, for many years a professor in the college, stating that the prize, consisting of a clinical microscope and accessories, offered to the

senior student passing the best bedside examination in general medicine, has been awarded to Dr. Jerome Meyers, with honorable mention of Dr. Joseph Lewi Donhauser.

The prize offered by Drs. Vander Veer and Macdonald for the best report of the surgical clinics was awarded to Dr. Tiffany Lawyer. For the second best report of these clinics, the prize offered by Drs. Hailes and Morrow was awarded to Dr. James Edward Maloney.

The prize, consisting of an ophthalmoscope, offered by Dr. Merrill for the best report of the eye and ear clinics, was awarded to Dr. Richard A. Lawrence.

The Townsend Physiological prize endowed by the late Professor Franklin Townsend, Jr., M. D., was awarded to Mr. W. D. Allen, for passing the best examination in physiology at the end of the first year of study.

Dr. Boyd's prize to the student passing the best final examination in obstetrics was awarded to Dr. Erastus Corning.

The prize, consisting of a case of surgical instruments, offered to the senior student passing the best final examination, by the late Dr. T. W. Nellis, was awarded to Dr. Jerome Meyers, with honorable mention of Drs. Joseph Lewi Bendell and Erastus Corning.

A prize, consisting of Gross' complete pocket case of instruments, offered by A. B. Husted & Co. to the first-year student passing the best final examination, was awarded to Mr. W. D. Allen.

The Daggett prizes, consisting of sixty and thirty dollars, respectively, for the best "anatomical specimens," were both awarded to Mr. Stanton Perry Hull.

The Daggett prize for the best "deportment irrespective of scholarship," consisting of sixty dollars, was awarded to Dr. Edward William Jackson, and the second prize, consisting of thirty dollars, was awarded to Dr. Edward George Benson.

The following hospital appointments were announced:

Albany Hospital—in order of merit: Dr. Erastus Corning, Dr. Jerome Meyers, Dr. Joseph Lewi Bendell, Dr. Richard Andrew Lawrence, Dr. Tiffany Lawyer, Dr. Charles Sanford Allen, Dr. Norman Charles Goodwin, Dr. Roy Charles Keigher.

St. Peter's Hospital: Dr. Marcus Denis Cronin, Dr. Louis Herbert Gaus, Dr. Jacob Henry Linden.

Pathologist, Albany Hospital: Dr. William Andrew Krieger, '06.

Samaritan Hospital, Troy: Dr. Clarence Robert Kay, Dr. David Kidd, Dr. William David Collins.

Ellis Hospital, Schenectady: Dr. William Carl Treder.

Cohoes Hospital, Cohoes: Dr. Edward George Benson.

Faxton Hospital, Utica: Dr. Edward William Jackson.

Pennsylvania Hospital, Philadelphia, Pa.: Dr. Joseph Lewi Donhauser.

Wilkesbarre City Hospital, Wilkesbarre, Pa.: Dr. Alfred Woodward Grover.

Rochester City Hospital, Rochester, N. Y.: Dr. Dean Wardell Jennings.

Homeopathic Hospital, Albany: Dr. Herbert John Wright, Dr. William Clare Porter.

Troy Hospital, Troy: Dr. Walter Thomas Diver, Dr. Augustus Joseph Hambrook, Dr. Alfred Thomas Gabriels, Dr. Stephen John Henry Reed.

Clinical and Pathological Notes

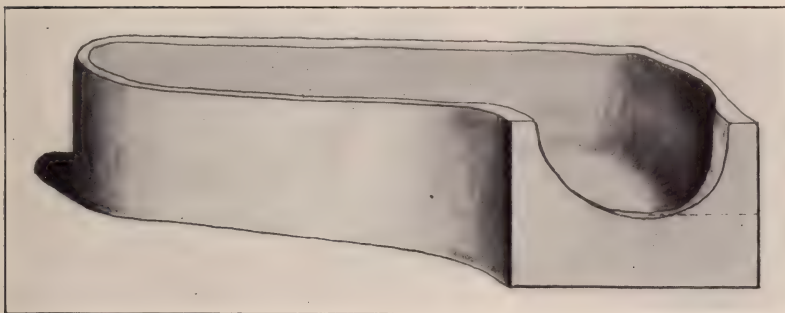
A Mould for Constructing Plaster Casts of the Feet. By GEORGE E. BEILBY, M. D., *Instructor in Surgery, Albany Medical College.*

The difficulty which is often experienced in making a plaster cast of the foot as a model for the construction of a flat-foot brace led the writer to devise a mould which has proved valuable not only in facilitating the making of the cast, but as an economizer of material. The mould, which is illustrated in the drawing and photograph, consists of a solid piece of boxwood hollowed out to conform to the shape of the foot, with a shoulder at (a) three-quarters inch in height, to prevent the escape of the liquid plaster. A right and left foot mould is necessary. It is also of advantage to have two sizes, a large and a small, though a mould of medium size can be padded to properly serve every purpose.

To construct the cast, a square of cotton cloth is placed over the mould and any undue space which will not be occupied by the foot may be padded with cotton batting. A sufficient quantity of plaster cream to cover one-half of the foot is then poured upon the cloth. The foot, after being smeared lightly with vaseline, is pressed into position as illustrated in the photograph. As soon as the plaster is hard its upper surface is smeared with vaseline, the corners of the cotton cloth are brought together over the foot and the remainder of the foot is covered with plaster cream. The upper half of the shell, when it has hardened completely, is removed. The foot is then withdrawn. The lower

To Illustrate Dr. Beilby's Article on "A Mould for Constructing Plaster
Casts of the Feet."

Albany Medical Annals, June, 1907.



a



half of the shell is allowed to remain within the mould. The upper half is replaced and firmly bandaged in position. The cast is then made in the usual manner by filling the shell with plaster cream after first moistening its interior with soapsuds.

This mould presents several advantages: 1. Proper position of the foot is readily determined. 2. An accurate position once determined is easily maintained. 3. The mould promotes cleanliness and is therefore especially desirable for office use. 4. The breaking of the lower half of the shell, which so often occurs, is obviated.

Little Biographies

XVIII. LUIGI ROLANDO.

THIS celebrated Italian anatomist was born at Turin, June 16, 1773. Although a member of a prominent family, he left his father's house at a youthful age and was confided to the care of a maternal uncle, the Abbé Mattei, who took charge of his early education. Rolando, after having passed through college in a brilliant manner, studied medicine at the University of Turin and applied himself to the study of anatomy under the tutelage of Cigna, a distinguished scholar, who selected Rolando from his pupils and showed him marked affection.

Medical studies did not absorb all his time, for Rolando occupied himself with other works. Natural history and especially zoology attracted his attention, as is proved by two pamphlets which he published upon this subject. When assistant professor at the College of Medicine, he took for the subject of his thesis the structure or the functions of the lungs of all classes of animals, and at the same time he wrote learned treatises upon the most dreaded disease of these organs—that is to say, phthisis. The first part of this dissertation shows how he had already plunged into human and comparative anatomy and zoology. The second so pleased Professor Brera that he had it inserted verbatim in volume X of his "*Sylloge Opusculorum Selectorum ad Praxim Medicam Spectantium*."

As one can see by the date of the appointment of Rolando, he had not followed King Victor Emmanuel in his retreat at the time of the French occupation of Piedmont, as has been advanced by some biographers. The fact is that the prince, advised by

Audibert, his chief physician, who had been able to appreciate the talent and learning of Rolando, invited him to repair to the island, and November 5, 1804, named him professor of practical medicine at the University of Sassari. Rolando set out upon his journey, but having arrived at Florence, was not able to go on because of the yellow fever, which had broken out at Livourne and had interrupted all communication between that village and Sardaigne. This enforced stay was not lost to science, and perhaps Rolando prolonged it purposely. The capital of Tuscany had so many attractions for the scholar and artist either by reason of the possibilities for instruction, which it presented, or because of the number of eminent men that it produced and contained, that it held him. Rolando not only connected himself with the most distinguished physicians, among others Fontana and Mascagni, but he also devoted himself again to the study of drawing and engraving, wishing to do without foreign help since he would have need of sketches and figures. After having published a work, "*Sur Les Causes Dont Dépend La Vie Dans Les Êtres Organisés*," Rolando finally left Florence.

In 1807 he went to take possession of his chair at Sassari. There he had charge in addition of the duties of protomedicat; but this double employment did not in any way relax his zeal for scientific researches, and in 1809 he printed "*l'Essai sur la vraie Structure du Cerveau de l'Homme et des Animaux, et sur les Functions des Systems nerveux*," which he dedicated to King Victor Emmanuel. This work presented some entirely new observations and ideas which were later issued, in part at least, by French anatomists without one being able to accuse them of plagiarism. The difficulty in the relations between Sardinia and the continent hindered the name of Rolando from spreading beyond the island. Nevertheless, the right of priority should not be contested to the Piedmontese scholar.

Audibert, having fallen ill, sent his protégé to Cagliari, who replaced him for the time being in charge of the court. Cagliari cared for him with the distinction of a son and had the good luck to cure him. In 1814 Rolando returned to Turin at the same time the royal family did, and was appointed professor of anatomy, and at the school of science and arts, advisor to the protomedicat, member of the provincial junto for vaccine of the Royal Academy of Science and to several other scholarly societies, Italian and foreign. Finally, after having cared for King

Victor Emmanuel in his last illness, he became the premier medicin to his widow, Marie Therése of Austria. Rolando found time to use his new accomplishments in the composition of new writings. Besides difficult dissertations printed in the memoirs of the Academy of Sciences of Turin and other collections, he published several important works. In 1824, with Dr. Martini, his confrère at the university, he founded a review, "Dictionaire Periodique du Medicine," wherein he printed his new anatomical observations and numerous physiological studies upon the nervous system and the organism. The reputation that he had made in France and England, and without doubt also the desire to vindicate the discoveries, the priority of which had been contested, induced him to visit these two countries. He stopped in Paris and received the welcome that his talents and his works merited. Later he made another trip to Florence, where the council of public instruction sent him to procure a collection of anatomical preparations in wax like those which the museum of the capital possesses. Although subject to intermittent fever, which had tormented him with irregular attacks for six years, Rolando started again on the road in the summer of 1830 and fulfilled his mission with great zeal and intelligence as was expected of him. This trip appeared at first to have improved his health, but he had hardly returned to Turin when he fell ill and took to his bed in January and did not leave it until the day of his death, April 20, 1831.

Among his works are the following: Anat. Phys. Comp. Diag. in Resp Organ. (1801); Observations Anatomiques sur le Structure du Sphinx Neru et autres insects (1804); Sulla Cause della quali dipende la vita negli esseri organizzetti (1807); Osservazioni sul cervelletto (Torino 1823); Saggio supra la vera struttura del cervello dell uomo e degli animali, et supra le funzioni del systema nervoso (Sassari 1809); Humani Corporis fabricae ac functionum analysis adumbrato (Turin 1817); Anatomes physiologica (Turin 1819); Inductiones physiologiques et pathologiques sur les differentes espèces d'excitabilité et d'excitement sur l'irritation, etc. (Paris 1822).

WILLIAM KIRK, JR.

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Births	91
Marriages	57
Still and premature births.....	5

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were three hundred and eighty-five inspections made, of which two hundred and fifty-eight were old buildings and one hundred and twenty-seven new buildings. There were sixty-five iron drains laid, forty-eight connections to street sewers, fifty-six tile drains, two urinals, thirty-six cesspools, one hundred and five wash basins, sixty-eight sinks, forty-five bath tubs, thirty-seven wash trays, six trap hoppers in yards, one hundred and fifty-three tank closets, one stable wash stand, one horse trough. There were one hundred and eighty-two permits issued, of which one hundred and fifty-two were for plumbing and thirty for building purposes. There were twenty-nine plans submitted, of which fourteen were of old buildings and fifteen of new buildings. Three houses were tested on complaint, one with the blue, red test and two with the peppermint test and there were twenty-three water tests made. Thirty-nine houses were examined on complaint and fifty-nine were re-examined. Twenty-one complaints were found to be valid and eighteen without cause.

BUREAU OF CONTAGIOUS DISEASE.

<i>Cases Reported.</i>	1903	1904	1905	1906	1907
Typhoid fever.....	4	8	2	6	8
Scarlet fever.....	10	20	5	22	4
Diphtheria and croup.....	22	24	7	6	41
Chickenpox	6	6	1	4	1
Measles	134	25	201	3	15
Whooping cough.....	2	0	0	1	0
Consumption	2	4	0	0	19
Totals	180	87	216	42	88

Contagious diseases in relation to public schools.

	<i>Reported.</i>	
	D.	S. F.
Public School No. 1.....	2	
Public School No. 4.....	1	
Public School No. 5.....	1	
Public School No. 6.....	1	
Public School No. 12.....	3	
Public School No. 14.....	1	
Public School No. 15.....	1	
Public School No. 22.....		1
Lady Help of Christians.....	1	
Cathedral	2	
Lady of Angels.....		1
St. Ann's.....	2	

Number of days quarantine for diphtheria:				
Longest.....	29	Shortest.....	13	Average..... 19 4-15
Number of days quarantine for scarlet fever:				
Longest.....	47	Shortest.....	14	Average..... 27
Fumigations:				
Houses.....	43	Rooms.....	97	
Cases of diphtheria reported.....				
				41
Cases of diphtheria in which antitoxin was used.....				
				38
Cases in which it was not used.....				
				3
Deaths after use of antitoxin.....				
				4

BUREAU OF PATHOLOGY.

BENDER LABORATORY REPORT ON DIPHTHERIA.

	1903	1904	1905	1906	1907
Initial positive.....	11	6	6	3	35
Initial negative.....	32	20	20	24	27
Release positive.....	6	1	0	9	112
Release negative.....	8	15	4	10	132
Totals	57	42	30	46	306

Sputum for tuberculosis:

Initial positive.....	4
Initial negative.....	11

MISCELLANEOUS.

Mercantile certificates issued to children.....	29
Factory certificates issued to children.....	17
Children's birth records on file.....	46
Number of written complaints of nuisances.....	81
Privy vaults.....	9
Plumbing	19
Other miscellaneous complaints.....	53
Total number of dead animals removed.....	498
Cases assigned to health physicians.....	56
Calls made.....	286

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

A regular meeting of the Society was held in the Albany Medical College on Wednesday evening, April 10, 1907. The meeting was called to order at 8.30 P. M., the President, Dr. Lempe, in the chair. The following members were present: Drs. Applebee, Ball, Babcock, Bedell, A. J., Blair, Blatner, Blessing, Campaigne, Case, Cox, Curtis, Devoe, Garlick, George, Giffin, Gutmann, Hacker, Holding, Jenkins, Joslin, Keens, Laird, Lanahan, Le Brun, Lempe, Lipes, Lomax, McHarg, MacFarlane, Morrow, Moore, C. H., Munson, Myers, Neuman, Newell, O'Leary, D. V., Jr., Papen, G. W., Sr., Rooney, Rulison, Ryan, Sampson, Shanks, Skillicorn, Silcocks, Shaw, Sheldon, Stevenson, Traver, Trego, Ullman, Vander Veer, A., Vander Veer, E. A., Vander Veer, J. N., Van Slyke, Winne, C. K., Winne, L. B., Ward.

1. *Reading of the minutes of the last meeting.*

The minutes of the last meeting were read by the Secretary.

Dr. ROONEY moved that the minutes be accepted and adopted as read. The motion was seconded and carried.

2. *Reports of officers and committees.*

The committee in charge of the matter of bringing to the attention of the city government the need of the removal of ashes and garbage and their disposal under city supervision made a report through its chairman, Dr. D. V. O'Leary, Jr.

Dr. CURTIS moved that the report be received and that the Committee be continued in office as long as should be necessary to accomplish the purpose for which it was appointed. The motion was seconded and carried.

Dr. HACKER and Dr. JENKINS made inquiries as to whether this action of the Society authorized the Committee to go before the Common Council and act for the Society. The President stated that the motion originally passed conveyed this authority and that the Committee was authorized to act for the Society in this matter.

3. *Election of members.*

Dr. LIPES proposed the name of Dr. E. J. HANARATTA of Watervliet. The name was referred to the Secretary in order that an application blank be furnished and the usual course taken.

4. *Unfinished business.*

No unfinished business was presented.

5. *New business.*

Dr. GUTMANN introduced the following motion:

Resolved, That the Medical Society of the County of Albany request the Common Council of the City of Albany to enact an ordinance establishing a system of medical inspection of school children in the schools

of the City of Albany, and that the Committee to which these resolutions are primarily referred be empowered to bring this matter before the Common Council.

Dr. MACFARLANE suggested as an amendment that if it seemed wise in the judgment of the Committee, the matter should first be referred to the school board before being carried to the Council. The amendment was seconded and carried.

Dr. GUTMANN moved that the President appoint a Committee of five (5) members of the Albany County Medical Society to seek the institution of an ordinance by the municipal authorities for the establishment of a system for the medical inspection of the school children and schools of the City of Albany, and that this Committee be invested with all the rights and privileges possessed by the Committee on the Disposal of Ashes and Garbage.

6. *Scientific program.*

Dr. ARTHUR J. BEDELL presented a series of pathological eye specimens.

Professor ABRAHAM JACOBI of New York gave, by invitation, an address on "Ulcer of the Stomach."

Dr. ALBERT VANDER VEER moved a vote of thanks to Dr. Jacobi for his exhaustive paper, so remarkable for its complete reference to authorities, and yet most beautiful in that it was for the main part the record of the author's own experience; and here he wished to state that he had seldom if ever heard an address containing so much of real worth. This subject was now being discussed throughout the world. Only a few days before Dr. Vander Veer had received circulars from an ex-president of the American Medical Association seeking the experience of surgeons regarding certain phases of this vexed question. These circulars had been sent to the surgeons of the United States in order to obtain a consensus of opinion. Dr. Vander Veer was much impressed by Dr. Jacobi's statistics as to the time of life at which ulcer of the stomach occurs. The general impression is that it is not met with in early life, but he also had seen cases as early in life as some of those spoken of by Dr. Jacobi. They had been considered remarkably rare. Surgeons working in the hospitals had been impressed by the frequency with which true carcinoma of the stomach followed ulcer of the stomach. He wished to emphasize to practitioners of medicine the importance of making an early diagnosis of ulcer of the stomach and of treating the cases medically. He also wished to emphasize the fact that when he had done this, and hemorrhage or symptoms of perforation appeared, the surgeon is entitled to be called in. Conditions which may cause embarrassment at time of operation, are adhesions to the stomach, hour-glass contraction adhesions to the gall bladder, liver, pancreas or anterior wall of the abdomen. The general practitioner should read Dr. Jacobi's paper especially with reference to diagnosis. The subject is an interesting one to study with reference to surgical results. We occasionally see cases which have been cured by the surgeon return for further treatment. In one case excision had been attempted fifteen years ago, now a gastro-enterostomy was done with much more satisfac-

tory results. Dr. Murchison's attention had been attracted to this matter of adhesions many years ago and he had given interesting exhibits of cases showing fistulous tracts connecting with the gall bladder, etc. In conclusion, Dr. Vander Veer wished to emphasize with earnestness the fact that certain cases should be referred to the surgeon. If not, vengeance is sometimes seen.

Dr. WARD seconded Dr. Vander Veer's motion. He also felt deeply indebted to Dr. Jacobi for his complete presentation of the subject. No condition was of more interest from a scientific point of view. The general practitioner should be ready to diagnose the condition. In the absence of visible hemorrhage he had been inclined to attribute pain and other symptoms to nervous affections of the stomach, or to digestive disorders rather than to ulcer. He had not seen a great many cases personally within the last few years, since there had been two eminent specialists in town. The large majority of hemorrhagic cases recover under medical treatment, but when the patient gets a perforation the surgeon is welcome to him, and to whatever glory comes from treating him. When the condition becomes chronic and there are frequent relapses, the case properly belongs to the surgeon.

Dr. NEUMAN stated that he had nothing to add to what had been said, but wished to speak of some facts which had presented themselves in his own experience. Where ulcer is present without hemorrhage it is frequently unrecognized. In about twenty per cent. of the cases in which gastric ulcer is found at autopsy has blood been previously found in the vomitus. If the stools are carefully examined a larger percentage of hemorrhages are recognized, as small bleedings are exceedingly common. The tests are simple, and if sources of error, such as red meats, broths, etc., are excluded, they are very satisfactory. Without these tests there is no evidence of bleeding in eighty per cent. of cases. Diarrhea was exceptional in the cases seen by Dr. Neuman. The pain in chronic cases may be relieved by opium, but the use of this drug is fraught with some danger of the formation of a troublesome habit. Cases vary greatly with regard to chronicity. Some cases are acute, even fulminating; in one instance a young girl was attacked by severe pain, not having been previously ill nor having had a history of gastric symptoms. Within forty-eight hours she became unconscious and died from perforation. Some cases are exceedingly chronic; there are essential differences between the two types. Adrenalin, except in a powdered form, had not been of much benefit. Theoretically it reduces glandular hyperacidity. Atropin is contraindicated in cases where there is distortion of the stomach, and stasis with retention. There is always thirst in such cases, as there is little absorption of water from the stomach. It is not desirable to use atropine under these conditions, and the patients are likely to rebel if it is employed. The rennin ferment formed in the stomach when introduced when it comes from the shop into milk forms firm, hard curds. To avoid the formation of such curds, Dr. Neuman stated that he liked to add some simple cereal, such as barley water, to reduce the size of the clots.

Surgery accomplishes brilliant results in cases in which the ulcer has

been present for a long time, and stasis has resulted. An anastomosis should be done. After operation the condition sometimes recurs. Very acid gastric juice coming into the duodenum may cause ulceration, or ulcers may surround the anastomosis. Surgery obtains brilliant results in cases in which the motility of the stomach is impaired.

In regard to digestion, leucocytosis as the differential sign between carcinoma and gastric ulcer, Dr. Neuman's experience has shown that the test is not of great value. For two years blood counts were made in every case that came under his observation. He said that he had now practically discarded the test.

Dr. Vander Veer had spoken of the fact that carcinoma sometimes occurs as a sequel to ulcer; in such cases one is very likely to find a condition of hyperchlorhydria, while in the cases which are carcinoma from the start, hydrochloric acid is likely to be absent.

A certain amount of lactic acid is contained in bread. This must be remembered in making tests of gastric contents. The fact that lactic acid is produced in the stomach does not of itself indicate the presence of carcinoma. It merely points to a condition of stasis in which the ordinary ferments are absent and the combination of conditions causes the production of lactic acid. In carcinoma of the pylorus we frequently have obstruction in stasis and therefore the lactic acid is not found.

Dr. MACFARLANE said that he had listened with the greatest pleasure to Dr. Jacobi's address. It had been an incentive to all of us to see a man who had been over fifty years in practice, who was seventy-five years old and appeared like a man of fifty, coming one hundred and fifty miles to talk on a subject of such interest. He had made the meeting a classic one—a delight. We were all his debtors to a great extent, since a man of such experience, such engagements, with so much work on hand, one of the greatest—if not the greatest—clinical teachers of the time, had been willing to come and speak to us. Dr. MacFarlane was sure that he voiced the feeling of the Society when he stated his great pleasure in Dr. Jacobi's address.

Dr. JACOBI, in closing, said that milk curdles in the stomach when it is drunk but not when it is eaten. It should be poured into a plate and eaten with a spoon. It was true that when milk was mixed with cereal the curds were broken up. He had not considered the subject of diarrhea in connection with ulcer of the stomach, but had spoken of it as a result to be avoided following the use of calcined magnesia. To prevent it he adds bismuth subcarbonate or chalk; bismuth subnitrate is too gritty. This is noted when rubbed between the fingers. Adrenalin cannot act on the glands of the stomach; hydrochloric acid is not a glandular product but is produced before it reaches the epithelial cells. Dr. Neuman would have to supply a new theory. Empiric facts carefully observed are worth more than our theories; theories limp after our facts. Theories and hypotheses are necessary; they are sometimes true and sometimes defective. The class of cases he had seen were not millionaires. Such cases were rife among working women. He could think of more than a hundred cases. Such patients are often sick for months before they come for help.

He diagnosed them from the indigestion with hyperacidity, the pain which came immediately while the patient was eating, as soon as the food got into the stomach, by the tenderness on slight pressure upon the epigastrium. Pain coming from fifteen to thirty minutes after was not due to gastric ulcer in nine cases out of ten. He remembered one case of a young girl who had pain thirty minutes after eating. At the operation only perigastric adhesions were found. In another case there was pain when peristalsis occurred. The pain must come immediately during a meal.

Dr. SAMPSON asked that, owing to the lateness of the hour, his paper be read by title.

Dr. LE BRUN moved that the Society adjourn. The Society adjourned.

ARTHUR T. LAIRD, *Secretary*.

GEORGE G. LEMPE, *President*.

Medical News

Edited by Arthur J. Bedell, M. D.

THE ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR APRIL, 1907. Number of new cases, 148; *classified as follows*: Dispensary patients receiving home care, 7; district cases reported by health physicians, 8; charity cases reported by other physicians, 77; moderate income patients, 56; old cases still under treatment, 71; total number of patients under nursing care during the month, 219. *Classification of diseases* (new cases): Medical, 55; surgical, 7; gynecological, 2; obstetrical, 38 mothers and 35 infants under professional care; dental cases, 7; throat and nose, 1; skin, 3; transferred to hospitals, 7; deaths, 13; contagious diseases in the medical list, 18.

Special Obstetrical Department—Number of obstetricians in charge of cases, 2; attending obstetricians, 2; medical students in attendance, 8; Guild nurses, 9; cases, 9; number of visits by attending obstetricians, 1; by the medical students, 48; by the Guild nurses, 105; total number of visits for this department, 154.

Visits of Guild Nurses (all departments): Number of visits with nursing treatment, 1,395; for professional supervision of convalescents, 244; total number of visits, 1,639. Six graduate nurses and 4 assistant nurses were on duty. Cases were reported to the Guild by 3 of the health physicians and by 44 other physicians and by 3 dentists.

—DINNER TO DR. ALBERT VANDER VEER.—A dinner was given May 2d, at the Hotel Ten Eyck, in honor of Dr. Vander Veer by more than one hundred of his former students. A silver loving cup was presented to the doctor, and speeches made by many noted men. Eulogistic addresses were made by Mayor Gaus, Hon. St. Clair McKelway, Hon. Andrew S. Draper, Dr. Joseph D. Bryant, Dr. Samuel B. Ward, Dr. Frederic C. Curtis, Dr. Thomas H. Willard and others, to which appropriate response was made by Dr. Vander Veer in accepting the presentation cup.

AMERICAN MEDICAL ASSOCIATION.—The annual meeting of the American Medical Association will be held at Atlantic City, N. J., June 4-7. Preparations have been made for an immense crowd, and the provisional program offers much of interest and value. Reduced rates on all railroads.

AMERICAN ACADEMY OF MEDICINE.—The Thirty-second Annual Meeting of the American Academy of Medicine (Specializing in Medical Sociology) will be held at the Hotel Dennis, Atlantic City, on Saturday, June 1, and Monday, June 3, 1907.

Provisional Program.—Friday, May 31st, 8.00 P. M. Annual meeting of the Council.

Saturday, June 1st, 10.30 A. M. Executive session of the Academy.

12.00 M. Open session of the Academy.

Report of the Committee on "The Teaching of Hygiene in the Public Schools."

Report of the Committee on "The Comparative Value of the First Degree in Our American Colleges" (final report).

Papers.—"The Communal Life of Physicians: Its Cultivation and Value." By Dr. Leartus Connor, Detroit.

"The Superiority of the Playground to the Schoolroom." By Dr. Woods Hutchinson, of Arrow Head Springs, California.

"Insurance for Defectives." By Dr. J. A. Spalding, Portland, Me.

8.00 P. M. Open session of the Academy.

Annual address before the Academy—Dr. Casey A. Wood, of Chicago, President of the Academy, "A Medical Career and the Intellectual Life."

Monday, June 3, 1907, 10.00 A. M. Executive session of the Academy.

11.00 A. M. Open session.

Symposium—The Relation of the Medical Profession to the Housing of the People.

Papers by Drs. Gertrude U. Light, S. A. Knopf, of New York, and others.

Symposium—The Relation of the Profession to Medical Legislation.

Papers by Drs. P. S. Conner, of Cincinnati, Henry W. Cattell, Henry Beates, Jr., of Philadelphia, and others.

Every reputable college-bred physician is eligible for membership in the American Academy of Medicine, and it invites all who are interested in the medical aspect of the social problems of the times to unite in its study of these problems. Blank applications and literature may be obtained from the secretary, 52 North 4th street, Easton, Pa.

BULLETIN OF THE AMERICAN ACADEMY OF MEDICINE.—The June number will contain: I. Hygiene and Biology, by Helen C. Putnam, M. D., of Providence. II. Should Credit Be Given in the Medical Course for Preliminary Studies beyond the Entrance Requirements, by Charles McIntire, M. D., Easton, Pa. With the usual variety of topics discussed in the leading articles, and the various departments. Address 52 North 4th street, Easton, Pa.

ANNALS OF SURGERY.—The June number of the *Annals of Surgery* is to be a special one containing superb illustrations, and including among others

the following papers: Dr. W. W. Keen, "Fracture at the Anatomical Neck of the Humerus and Dislocation of the Head into the Axilla, with Fracture of the Shaft, Difficult Removal of Head of Humerus;" "Fracture of the Greater Tuberosity of the Humerus, with Dislocation of the Humerus into the Axilla." Dr. Wm. J. Mayo, "Treatment of Acute Ulcer of the Stomach." Dr. A. T. Osgood, "The Diagnosis of Obscure Cases of Renal and Ureteral Calculus." Dr. Nathan Jacobson, "Toxic Nephritis Dependent Upon Surgical Conditions." Dr. J. Collins Warren, "Plastic Resection of the Mammary Gland." Dr. Clarence A. McWilliams, "Primary Typhlitis Without Appendicitis." Dr. Edward L. Keyes, "Tuberculosis of the Testicle." Dr. R. C. Coffey, "Closure of Fecal Fistula." Drs. George Chandler and Leon K. Baldauf, "Lipoma of the Intestine in a Child Thirteen Months' Old." Dr. Max W. Myer, "A Malignant Type of Pseudomyxoma Peritonei Penetrating the Spleen and Colon."

GREAT INTERNATIONAL CONGRESS ON TUBERCULOSIS.—During the hottest part of the presidential campaign in 1908, Washington will be the scene of one of the most important scientific congresses ever held in America, when a large number of distinguished men from all parts of the world, physicians, hygienists, sociologists and humanitarians, will assemble to discuss the problem of tuberculosis. This great gathering will be organized under the name of the International Congress on Tuberculosis and will hold its sessions from about September 20th to October 10th. It will number several thousand members and delegates, and the visitors to Washington on account of the Congress, it is predicted, will number thousands more.

The Directors and Council of the National Association include the most noted authorities on tuberculosis in this country, and they are, moreover, a body of wise men in public affairs. Their plans contemplate something far broader than a convention of scientific men. They expect to have a Tuberculosis Exhibition, which, up to its date, will surpass in variety and interest anything of the sort ever attempted. This method of educating the public on this subject is employed in many foreign countries, and in this country it has of late become well known through the popular exhibition of the National Association and of the New York Tuberculosis Committee. During the three weeks while the exhibition is in progress visitors can learn what is going on the world around in the fight against tuberculosis. The exhibition will be open and free to the public at all times, and its contents will be as interesting to the man in the street or to the high school pupil as to the savant.

The International Congress will provide, in the exhibition, a great collection of interesting things, but the Congress itself will be a great collection of interesting persons. Many of the distinguished authorities on this subject in Great Britain, Germany, France, Sweden, Russia, Japan, Italy and South America who are widely known by name in this country will visit the United States at the time, not only for the purpose of discussing tuberculosis in the scientific sessions, but also to make public addresses in Washington and other cities.

The work of organizing the International Congress has been intrusted

by the National Association to a special committee consisting at present of Dr. Lawrence Flick, of Philadelphia, Dr. Vincent Y. Bowditch, of Boston, Dr. Alfred Meyer, of New York, Dr. J. J. Walsh, of Philadelphia, Dr. Lawrence Litchfield, of Pittsburg, Dr. Charles J. Hatfield, of Philadelphia. The Committee has appointed as Secretary-General, Dr. John S. Fulton, of Baltimore, who has opened an office in the Colorado Building in Washington, and he will devote all his time to the organization of the Congress. Such men as H. C. Frick, Henry Phipps, Henry L. Higginson, Martin Maloney, William P. Henszey and George Blumenthal are giving their financial support to the movement and have contributed to the fund of \$100,000 which is being raised to carry through the Congress.

The last International Congress on Tuberculosis met in Paris in 1905, at which time the American delegates invited the Congress to hold the next meeting in the United States. Mr. Roosevelt seconded the invitation, through Mr. McCormick, the ambassador to France, and the invitation was accepted with a great demonstration of enthusiasm. While it was generally understood that President Roosevelt acted unofficially, the government is actively interested in the International Congress on Tuberculosis. Its interest became manifest as soon as the National Association called the matter to the attention of the Secretary of State, and on February 25th a memorial, asking for the necessary authority and means, was sent to the United States Senate, bearing the endorsement of seven out of the nine members of the cabinet. Among foreign governments the International Congress is already looked upon as of high importance, and most foreign governments will be officially represented at the meeting in Washington.

This occasion will excite extraordinary interest not only among physicians and the medical schools within easy distance of Washington, but will be hardly less attractive to sociologists, for in this country the tuberculosis problem has taken a strong hold on the leaders in organized charity, many of whom have become leaders also in the anti-tuberculosis movement. Another class of visitors likely to attend in numbers will be the veterinarians. In proportion to their number it is probable that the public health officials and the hospital and sanatorium men will be on hand in largest force.

In the work of preliminary organization the Committee has adopted a policy which seeks to make the characteristics of our political structure quite clear to the foreign visitors. The Committee is not sending its invitations directly to private individuals who are interested in tuberculosis, nor to institutions, nor to organizations, official or unofficial, but invitations are being given to governors of all the states, requesting them in turn to invite their municipalities and other local agencies, either directly or through some department of state government. By this means it is hoped that the state will participate as units and that thus they will give an account of all the forces engaged against tuberculosis within their respective limits. The restriction of tuberculosis is a political problem, quite as much as it is a medical problem, and by extending its organization along official lines, the Congress will probably secure the largest and most enduring benefits to the country, and at the same time represent the

country in the most favorable way to foreign visitors. An undertaking which will bring all the energies now engaged in the world's combat against tuberculosis to a focus in Washington for nearly a month will undoubtedly leave a permanent impress on the whole country and will yield large return for the money invested. When the forty-five states grow busy in preparation, when state boards of health, dairy commissions, tuberculosis commissions, live stock boards, schools of agriculture, medical schools, research laboratories, city health departments, and the numerous unofficial agencies dealing directly with the tuberculosis problem, begin to make ready for the International Congress on Tuberculosis, substantial values will accumulate at a great rate. The initial enthusiasm has not waited for a signal from the Committee on Organization. Public officials in more than a dozen states and in eight or ten Federal bureaus are already active in anticipation of the Congress, so that the task of organization is found in a growing state before the National Association, the chief sponsor for the Congress, lays a hand upon it.

THE JOINT COMMITTEE OF THE NEW YORK MILK COMMITTEE AND THE COMMITTEE ON THE PREVENTION OF TUBERCULOSIS.—In order to reduce the number of cattle in the state suffering from tuberculosis and supplying impure and perhaps dangerous milk, the New York Milk Committee and the Committee on the Prevention of Tuberculosis of the Charity Organization Society have decided that the laws need better enforcement and certain amendments. At the present time the State Department of Agriculture is authorized to make the so-called tuberculin test to determine whether cattle are tuberculous and to destroy cattle found by this method or through physical examination to have this disease. This test, by which a product of the growth of the tubercle bacilli is injected in small quantities in animals, shows with great accuracy whether cattle have or have not tuberculosis, the "reaction" consisting of a rise in temperature which indicates the presence somewhere in the animal of the germs of tuberculosis. The present practice is for the Department of Agriculture to make very few of these tests and those principally upon the request of the cattle owners themselves, the appropriations for this work and for the payments to owners on account of cattle destroyed being much too small to carry the work on in an extensive or adequate scale. As a result of the state's failure to spend money for these purposes tuberculosis is often not detected by farmers until several of their cows have been infected and tuberculosis is thus reported to be on the increase in the herds of at least some countries. It is thought that with not less than \$200,000 to be spent each year by the Department of Agriculture in testing and condemning, and with the help of farmers themselves who would be paid a proper compensation for their stock destroyed, a long step will be taken toward securing a milk supply free from the danger of tuberculosis infection. The Joint Committee believe that Assemblyman Mathews' bill now pending at Albany is sound in principle in increasing the amount to be paid to the dairymen by the state on account of cattle condemned for the purpose of protecting the public health. Conferences which have been held with the Governor, the Department of Agriculture, Assemblyman

Mathews and others lead the Committee to think that a law can be enacted at this session of the Legislature that will deal fairly with both the milk producer and milk consumer. It is proposed that a strict quarantine shall be established on all cattle coming into the state and that they shall all be tuberculin tested, and further, that milk sold or handled by any person suffering from any contagious or infectious disease shall be considered as adulterated and its sale forbidden. No one who has been exposed to an infectious or contagious disease is to be permitted to work on a dairy farm or in a dairy or creamery until he has received from the local health authorities a clean bill of health. These provisions and the co-operation to be established between local and state health officers and the state Department of Agriculture, it is thought, will meet with very general approval throughout the state.

PROFESSOR POLITZER'S RETIREMENT.—Professor Politzer, of Vienna, at the end of the summer term 1907 will be forced to resign from the University owing to the age limit law.

On the date of his retirement it has been decided to issue a plaquette (medal) after a copy made by the renowned sculptor, Mr. Telcs, bearing a portrait of the master. A copy of the plaquette in gold is to be presented to Professor Politzer by the local committee on the designated day; other copies, some in silver and some in bronze, will also be struck off to serve as souvenirs of the eminent scientist and of the memorable day. These will be put at the disposition of those who wish to subscribe to the celebration.

Together with the plaquette an address, containing all the names of the subscribers, will be given to the master.

All medical men are invited, in particular all former students of Professor Politzer, and all otological specialists who desire to honor him, to send their applications to the treasurer.

All communications should have plainly written the names, titles and the exact address of the sender, and should be accompanied by a remittance of twenty-four Kronen (one sovereign or five dollars) for the silver plaquette, or twelve Kronen (ten shillings or \$2.50) for the bronze plaquette, and be sent to Dr. D. Kaufmann, Vienna, VI., Mariahilferstrasse 37.

PERSONALS.—Dr. T. L. CARROLL (A. M. C., 1885) has moved to 232 Lark street, Albany.

—Dr. GEORGE M. CASEY (A. M. C., 1906) has started practice in Sandy Hill, N. Y.

—Dr. A. H. TRAVER (A. M. C., 1899) sailed for Europe April 29th. He expects to return in July or early August.

—Dr. E. L. HANES (A. M. C., 1899) has been appointed superintendent of Comb's Sanitarium, Flushing, L. I.

—Dr. J. T. ROBINSON (A. M. C., 1906), who has been pathological assistant at the Bender Laboratory for the past year, will assume his duties as resident physician, Presbyterian Hospital, New York, June 1st.

—Dr. HOWARD LAMOREAU (A. M. C., 1900) has been appointed superintendent of the School for Feeble-Minded at Grafton, N. D.

—Dr. VERNON R. EHLE (A. M. C., 1906) will start practice in Gloversville, N. Y., when his service at Ellis Hospital, Schenectady, is completed.

—Dr. CLINTON B. HAWN (A. M. C., 1906) will be pathological assistant at the Bender Laboratory, starting June 1st.

—Dr. ROY M. COLLIE (A. M. C., 1906) will start practice in Schenectady, N. Y., in June.

—Dr. W. S. KILTS (A. M. C., 1906), who has been Dr. Neuman's assistant, has started practice in Richmondville, S. I.

—Dr. A. J. BEDELL (A. M. C., 1900) has moved to 354 State street, Albany.

DEATH.—HEZEKIAH D. FULLER, M. D. (A. M. C., 1879), a member of the State and County Medical Societies and of the Fox River Valley Medical Association, died at his home in Berlin, Wis., March 20, from uremia, after an illness of two days, aged 57.

In Memoriam

JOHN HOTALING, M. D.

Dr. John Hotaling died at his home at Gallupville, N. Y., March 30, 1907, as the result of an apoplexy of a week's duration.

Dr. Hotaling was born in South Bethlehem, Albany County, N. Y., December 3, 1837. In his early boyhood he attended the public school of that place, and later prepared himself to enter the Albany Medical College, from which institution he graduated with distinction in 1863. Immediately after his graduation he received the appointment as attending physician in the Albany city almshouse hospital, which position he acceptably filled for one year. He then went to Gallupville and formed a partnership with the late Dr. Zeh. About two years later he entered upon his labors alone, and during the years which have intervened between that time and his death, he has practiced continuously at this place. He was a man of spotless character, a citizen ready to assist in the moral and spiritual uplift of the community and a physician of marked ability and great success.

Dr. Hotaling married Miss Salinda E. Zeh and two daughters were born. He was a member of the Reformed Church of Gallupville, and when the church was in its flourishing condition contributed largely towards its spiritual and financial support.

Current Medical Literature

GYNECOLOGY

Edited by John A. Sampson, M. D.

Concerning Enteroptosis, together with Remarks on Intra-Abdominal Pressure. (Ueber Enteroptose, nebst Bemerkungen über die Druckverhältnisse im Abdomen.)

P. MATHES. *Archiv für Gynäkologie*, 1905, LXXVII, Heft 2, Ss. 357-452.

In this exhaustive article, the writer considers all sides of the subject and as a result of his studies gives the following summary:

Enteroptosis is an constitutional and inherited anomalie of the entire organism. It derives its name from the changes it implies, that is, the falling of the abdominal organs. This anomalie consists in a relaxation the situation of the abdominal organs is often primarily caused by the insufficiency of a poorly developed, flattened thorax, and secondly by the relaxation of the abdominal wall. In this altered condition the abdominal organs are partly supported by their ligaments and partly by the abdominal wall.

The general build of the individual and likewise the facial expression permits this anomalie to be easily recognized. The vertebral column is bent forward, the lumbar lordosis is only slightly or not at all evident, so that the long axis of the thorax and that of the abdomen form an obtuse angle, opening forwards. The pelvis is only slightly inclined. The face is juvenile. The habitus enteroptoticus is identical with the so-called habitus phthisicus.

The clinical significance of this anomalie depends upon to what extent the nervous system shares in the general changes in the individual. The greater the congenital changes so much the earlier the disease appears. This is especially true of the infantile form, which is characterized by a hyperplasia of the thorax and a general infantile make up. The chlorosis of such girls is an enteroptotic crisis (Meinert).

An exciting cause is needed in most cases to convert the latent disposition into a definite disease. These causes are: exhaustive illness; pregnancy, labor and the puerperium; compression by corsets and the bands of petticoats and skirts; bodily and mental over-exertion; poor nourishment and irrational ways of living; acute and chronic physical injury; diseases of the genital organs. Enteroptosis is, especially, of frequent occurrence in diseases of the pelvic organs of women and in all stages of these diseases.

The symptom complex of retroflexion of the uterus is identical with that of floating kidney and enteroptosis. They both have symptoms in common. The peritoneum of such patients, from the beginning, is very sensitive. This sensitiveness is increased by disease of the pelvic organs. The effects on the general nervous system have nothing to do with hysteria and neurasthenia.

Enteroptosis is a disease of our time, inasmuch as, at least, in many countries it is rapidly increasing in frequency. Still the habitus enteroptoticus has always been present, as shown by the paintings of the old masters.

The therapy consists in the general use of tonics; in severe cases, rest in bed and forced feeding is indicated. Gymnastic exercises for the strengthening of the thorax and abdominal walls is indicated, as a mode of treatment to relieve the cause of the trouble. Most of the symptoms can be relieved by wearing a close-fitting abdominal binder. The local treatment of gynecological diseases is limited to a small number of cases and is to be employed only in those cases in which it relieves the cause of the trouble.

An extensive prophylaxis should be employed to compensate the constitutional defect and, also, to prevent the occurrence of the exciting cause in those predisposed.

ALBANY MEDICAL ANNALS

Original Communications

INSANITY AND CRIME.

Remarks relating to the topic of the evening, at the County Medical Society, Philadelphia, Penn., April 10, 1907.

By JOHN B. CHAPIN, M. D.,

Medical Superintendent, Pennsylvania Hospital for the Insane, Philadelphia, Penn.

Capital crimes committed by the insane are usually atrocious, cruel and shocking. Crimes of this character are often marked by evidences of preparation, determination of purpose, and the perpetrators seem regardless of the presence of witnesses, or the time and place chosen for the commission of their deeds. It can also be stated that the crimes exhibit an excessive degree of ferocity—that is, a degree greater than may be necessary to accomplish the purpose. The criminal deed, according to general experience, is prompted by the existence of delusions of a disordered, diseased mind, or during a period when the faculty of inhibition is suspended or obtunded, as in frenzy.

Considering the many thousands of insane persons domiciled in the hospitals of the county, but a very limited number of homicides occur within their walls. Speaking of my own experience in hospitals with which I have been connected—covering the observation and care of between eight and nine thousand insane persons—I do not recall a single instance. Without accurate data at hand, I can from memory state the number of persons engaged as officers, or persons employed in the care of the insane in other hospitals in our county, who have suffered death at the hands of patients would not exceed twelve, if indeed even that number could be named. This exemption from crime may be partly explained perhaps from absence of weapons and the exercise of surveillance—an exemption that would not deter the issue of an insurance policy at the ordinary rates. It can be correctly

inferred therefore that the number of insane with homicidal and criminal tendencies is not large, and constitutes but a very limited class. Of 29,000 insane persons in the state hospitals of New York, 685 are in the Matteawan State Hospital (criminal hospital), of which number seventy-three are insane and under indictment for homicide. Of the 685 in Matteawan, three are classed as paranoiacs.

While there is no necessary connection or association or relation between the condition recognized as insanity and crime, yet the perpetration of a revolting crime in itself is apt to raise a presumption of the existence of insanity as the only solution. Insanity implies the existence of disease and consequent irresponsibility. Crime is "an offense against social order which subjects the doer to legal punishment," if he possesses the capacity of free volition. The counsel and opinion of medical men are often solicited, and it may be a duty in the interests of justice to render this service of advice to differentiate insanity from sanity, from shamming, feigning or malingering. Without assuming a virtue, I may say for myself that no one can approach the study of any of these cases where insanity has been interposed as a defence without realizing the responsibilities involved. The issue is one of life or death. Of the more than thirty capital trials at which I have attended as a witness, I can state that no two have been exactly alike, although there have been similarities of types. The physician who accepts professional service in the majority of these cases will probably be confronted with some embarrassments. The prisoner is usually in confinement. There is generally no clinical history prior and subsequent to the commission of the crime that is accessible or obtainable. The prisoner is reticent and the officers of jails sometimes equally uncommunicative. The prisoner may attempt to feign some form of insanity, beginning immediately after the commission of a crime or suddenly during imprisonment. It may be in the nature of a maniacal outbreak or a profound dementia. The prisoner is doing exactly what an insane person may do, and the physician must abandon the case in the midst of his doubts or be governed by some principle in reaching a conclusion. He must take counsel of his clinical experience and what it has taught him, as the physician in general practice may do in the study of a case. Clinical experience teaches that insanity is not a sudden or instantaneous affection, but the culmination of

conditions or causes operating over a considerable period of time. A physician in general practice may examine his patient and from experience correctly determine the disease and even indicate the stage of it with considerable exactness. So the alienist may determine that profound dementia, as it may suddenly appear in a case of simulation, is feigned, as it is, according to experience, a terminal stage of several insanities of several months' duration. The terminal stages of disease usually appear last and not first. A similar principle may be applied to the examination of other forms of mental disorder, as all forms of insanity probably have some regular order of development if it could be ascertained—a period when the patient crosses the shadowy line between sanity and insanity, and a clearly defined terminal stage is reached if the patient does not recover and yet lives to reach the chronic stage. An adherence to this rule of examination may be helpful to distinguish with some certainty those actions which the insane actually do, and yet are feigned, from the manifestations which characterize the actual disease, and still any one may form an erroneous opinion because human judgment is not infallible. Legal insanity implies a prolonged change from the usual or normal state, and the existence of delusions in accordance with and in consequence of which a criminal act is performed, irrational conduct, as in delirium from toxic conditions, or in dementia. The delusions of the insane imply the existence of disease and are not to be confounded with erroneous opinions entertained by a patient. The application of a test of what is right or wrong is of little importance in itself, as the majority of the insane have a clear conception of the distinction. The mental faculties may, however, be so clouded and irrational as to be unable to make the distinction or determine the nature and character of an act.

The student of abnormal psychology in its relation to insanity and crime has experienced the greatest embarrassment, not in the classification of those more clearly recognized forms of insanity which have been familiar to the medical profession, the courts and intelligent laymen for a hundred years, but in the study of obscure mental manifestations gradually developing at any age after puberty, steadily progressing to an unfavorable termination. The intellectual faculties, so-called, or those that are principally engaged in forming judgments and conclusions seem principally involved. There is a gradual and progressive

degeneration. Dr. George Savage of London has said in a homely illustration of houses that they tumble own and go to pieces, but no two houses fall down exactly alike. It might be an apt application of this saying that there are common instances of mental degeneration but no two, such is the complexity of the human mind, degenerate or pass to a lower plane exactly in the same lines.

The clinical study of these cases has led some foreign writers to introduce a new nomenclature to describe some of the mental degenerations, which has been accepted in Germany and partly in other countries. The Medico-Psychological Association of Great Britain, after a prolonged consideration of a new nomenclature lasting through several years have declined to introduce many of the new names. The time has not yet arrived when a satisfactory nomenclature will be universally accepted. There is no nomenclature now existing which can or will be acceptable that is based mainly on the causes, the symptoms, or the pathology of insanity. Too little is yet known for the purpose. Hence in a judicial inquiry or trial, which should have for its purpose to determine simply whether a party is sane or insane, it is unfortunate that a contention frequently arises mainly as to the form. In the trial in progress in New York there has been a great interest mainly in the issue of the battle of the experts mainly as to the form of disease; the six on one side and seven on the other,—leaving the contention at “sixes and sevens”—rather than upon the question of the guilt or innocence of the defendant. What a sad commentary on the state and uncertainty of science! might be a just observation to be made upon the proceedings in this trial. It is naturally quite in the interest of the legal profession in the course of an insanity trial to promote contentions about the classification or form of insanity. After showing to the court and jury the lack of agreement and uncertainty shown, it is quite common to announce that the learned experts are not agreed, and then make an appeal to the jury that *they* cannot be expected to understand a perplexing problem when men of science are at variance.

Although the human mind is now constituted much as it has been throughout the centuries, and its normal and abnormal operations are more studied and known, yet we are still awaiting what Andrew D. White has called the “final struggle and victory of science.” Notwithstanding an enormous amount of

psychologic speculation and clinical study, aside from the occasional discovery of new terms, there has been no addition to our knowledge of the essentials or nature of psychic force. Under present conditions is it probable there ever will be? *The adoption of new terms in the classification of insanity does not imply actual discoveries.* They are useful only so far as there is a general acceptance and consensus of opinion in use of new terms. Esquirol, in his clinical records a hundred years ago, used the Latin term *Monomania* to describe certain forms of insanity. The term Paranoia was subsequently introduced as a substitute. Westphal and Meynert proposed to substitute the term Primäre Verrücktheit. All these terms seem to imply a recognition of a mental degeneration that is quite similar, but the Greek derivative has prevailed. The introduction of any of these terms in a trial court with the expansive, wide latitude of interpretation that is given to them seems to be confusing to the court, and to imply an ability to discern things inscrutable to ordinary mortals. Inasmuch as physicians are called into court to give opinions, it is a misfortune that we have not a nomenclature which may be generally accepted.

For my own part I am content to stand on the nomenclature of the British Psychological Association and that of the French and Belgium Societies, all of which closely approximate, until a better one is substituted. For the protection of society we must adhere to the distinction which the courts make between medical and legal insanity. This Association has excluded the terms "paranoia" and "dementia præcox" in its newly adopted nomenclature.

The discussion of the expert in court in insanity trials would seem to have a place here, but under your rules the time limit has been reached. The problem, however, still remains how to place the medical expert on the stand without, or free from, bias, as well as how to create a board of experts free from preconceived views of responsibility for crime, or obligations of any kind to the courts, politicians, or school of medicine or psychological theorizations.

RÉSUMÉ OF EXPERIENCE OF THE NEWARK CITY
LABORATORY.

*Read before the Medical Society of the County of Ulster, at
Kingston, N. Y., 1907.*

By R. N. CONNOLLY, M. D.,

Newark, N. J.

*Mr. President and Members of the Medical Society of the County
of Ulster:*

In attempting to take advantage of your kind invitation to address you on matters pertaining to medicine, it seems like "bringing coals to Newcastle," as this society, with an active history of over one hundred years behind it, numbers among its members many physicians who, having the advantage of living in a place situated as Kingston is, with Albany on one side and New York City on the other, are enabled to keep abreast, if, indeed, not ahead of the times in information regarding modern methods and their application to medical and sanitary science.

I will offer, therefore, as an excuse for the following remarks, which contain little that you are not already familiar with, the fact that I am informed you are interested in the question of a local diagnostic laboratory, and our experience with such an institution in the city of Newark, New Jersey, may be of some interest at this time.

In February, 1895, the Newark City Laboratory was established after considerable public agitation and in the face of opposition of such a character that were it not for the fact that a few energetic doctors, together with some public spirited and progressive laymen advocated the project—which had become a subject of general discussion in the press and at public meetings—those who were responsible for the city's administration would never have sanctioned the plan. In fact the place was established by the Common Council and the Local Board of Health over the veto of the Mayor of the city at that time. The reason given for the opposition was that such an institution would only prove an expensive luxury and be of little value to the city. It may be said in passing that at the end of that Mayor's term of office the institution was pointed to with some pride by the Mayor's admirers as one of the useful improvements instituted during his administration.

The laboratory was originally located in an unused room in the City Hospital Building where expenses for rent, light, heat and water were reduced to a minimum, and by this arrangement it was possible to return to the City Treasury at the end of the first year, after equipping the laboratory and paying all expenses connected with its management, over twenty-five per cent. of the original five thousand dollars appropriated for the institution, though it was claimed by those who opposed the establishment that five thousand dollars would only be "a drop in the bucket" of the amount required to maintain such a place.

When it is understood that four horses were purchased and maintained for the production of diphtheria antitoxin, the original investment will not seem extravagant for a city as large as Newark.

It is now twelve years since the Newark City Laboratory was organized, and during that time the institution has had an opportunity on more than one occasion to demonstrate its usefulness to the community when questions of importance arose which required assistance such as can only be given by an institution of this character.

The condition of the city water supply, the milk supply and occasional outbreaks of glanders among horses are some of the subjects investigated; while the routine examinations of cultures from suspected diphtheria cases, of sputum for tubercle bacilli and of blood for typhoid reaction, or for malarial infection, amount to several thousand specimens each year.

The extent to which physicians of Newark and the surrounding towns use the facilities of the laboratory is perhaps the best evidence of the usefulness of the establishment; this is particularly true of physicians who reside outside of Newark and are required by the local Board of Health to pay for their examinations and for the antitoxin obtained from the laboratory. From this source alone in 1905 the city collected the sum of \$1,766.30, which materially reduced the cost of maintenance.

The city of Newark has a population of about 282,000 and furnishes diphtheria antitoxin free for all cases occurring within the city limits, making no distinction regarding the social condition of the patient. It requires only the name and address of the patient over the physician's signature in order to obtain the serum, which may be procured at stations, of which there are twenty-five, situated in various parts of the city, conveniently

located so that the antitoxin may readily be obtained by the physician when he requires it.

The reliance that physicians place on the antitoxin made at the City Laboratory is illustrated by the records for 1906, which show that we had 1,272 cases of diphtheria reported during the year and about ninety per cent. were injected with the serum, giving a mortality of a little over five per cent.; while in the ten per cent. of cases not injected, a mortality of over twenty-two per cent. occurred.

By examining the official records of Newark for the last twelve years, we find that there were 14,985 cases of diphtheria reported during that time. The records also show that 10,967 of these cases were injected with the antitoxin made by the city with 874 deaths—an average mortality of about eight per cent.

We also find that 4,018 cases of diphtheria were not treated with antitoxin, and in this class there were 838 deaths—a mortality of about twenty per cent.

Taking the above figures into consideration, it seems safe to assume that if no antitoxin had been used in any of the cases in Newark during the last twelve years, the same average mortality would have resulted as occurred among the non-antitoxin cases during the same period; so that with 14,985 cases and twenty per cent. mortality we would have had 2,997 deaths instead of 1,712 which took place.

If the assumption is correct, and I believe it is, there have been saved in Newark alone during the past twelve years 1,285 lives by means of the antitoxin furnished gratis by the city. Has it been worth the expense?

This reference to the work of the Newark Laboratory is made to convey some idea of the value such institutions may be to a community, though, of course, each place must study its requirements and determine the minimum expense that will provide for the needs of the territory in which the laboratory is situated.

In a small town or city where antitoxins or vaccines are not expected to be made, and only diagnostic work required, a comparatively inexpensive equipment will answer the purpose.

If a room containing water and gas connections can be obtained, experience proves that for about five hundred dollars a fairly equipped laboratory can be provided, and except for the collection of specimens for examination and the distribution of supplies, the actual running expenses would be very little; pro-

vided the person in charge make his own culture media and prepare his staining solutions.

The question of remuneration for a person who is capable of doing satisfactory work and acquiring and keeping the confidence of physicians who depend upon his judgment, is usually an important matter; though in some places young men have been found who are capable of doing this kind of work and are willing to give their services for a nominal salary.

In order to make a success of a municipal laboratory, however, it is imperative that some system be established and maintained so that when a physician sends his specimen for examination he can expect an answer in a reasonable time and feel confident that the result obtained is the best possible one.

It must be constantly kept in mind by the person in charge of the laboratory that when a physician sends a specimen for examination it is usually an important matter for the physician, and, consequently, every specimen received deserves all the attention the laboratory is able to give and the result of the examination should be in the physician's hands at the earliest possible moment in order to be of any service.

As a municipal laboratory is primarily established in the interest of the whole community especially for the diagnosis of infectious or communicable diseases, it should be distinctly understood that investigations relating to such diseases are of first importance, and investigations of a purely personal character take a second place.

The aid even a small bacteriological laboratory can give the local authorities and physicians is really considerable in diagnosing already infected cases and preventing spread of infection to others than the patient under observation. For instance, diphtheria outbreaks in families or schools may be prevented to a large extent if the first case is recognized in time; in tuberculosis the unfortunate victim of infection may have his life prolonged and the disease even cured if the character of the infection is recognized early enough to enable the patient to take proper precautions. How many fall victims to this disease whose cases were diagnosed often by conscientious physicians as malaria, gastritis, bronchitis, etc., when an examination of the sputa would have discovered the cause of the trouble before the patient's strength was so impaired that there was no longer any hope to save him.

Typhoid fever is an insidious disease in its onset, and frequently great aid can be obtained by an examination of the patient's blood, and the assistance rendered by examination of drinking water in preventing an outbreak or locating the source of one is often of inestimable value. Malaria, tetanus, the various septic infections and specific diseases can also be readily diagnosed in the laboratory, so that the community, the physician and the patient are all benefited by the early and certain recognition of the character of the infecting agent.

INFANT FEEDING.

Read before the Saratoga Springs Medical Society, February 1, 1907.

By FREDERIC J. RESSEGUIE, M. D.

I believe the subject of practical infant feeding to be one of the most important, and, at the same time, one of the most neglected by the general practitioner, whereas, if it received the attention it so well deserves, it would put in our hands a potent factor for the comfort and the very life itself of the nursing babe. By having a practical working basis in mind, we can by this means cure a large per cent. of the gastric and intestinal diseases of infants, and better still, perhaps, prevent them altogether, while rickets and marasmus would become much less frequent, as I believe they should, and the summer mortality particularly would be reduced to the minimum.

Whether from ignorance or from a woeful lack of interest on the part of the prior attendant, I have seen many infants uncomfortably, if not dangerously, ill as a result of taking improper food. This condition of affairs I confess is sometimes unavoidable, particularly in the cases where the breast milk fails and resort is had to artificial feeding; yet, in some of these cases, so little judgment is shown in the preparation of food, that it produces at once indigestion with all its harassing symptoms. There is comparatively little trouble or worry to the physician whose tender charge has the advantages of the mother's milk, especially if the mother be of the intelligent class and is systematically and properly giving suckle to her babe. On the contrary, we are called to treat conditions varying from simple mild colic to convulsions in the bottle or hand-fed, and it is here, particu-

larly, that I know much of the suffering can be avoided, or, without resort to drugs, a perfect and often prompt recovery will result by simply changing or intelligently modifying the food. Among the poor or ignorant, however, it is often impossible to bring about proper conditions of hygiene and cleanliness, or the proper preparation of the food of whatever kind or the regular giving of the food, or to even prevent various articles being given from the table should the baby vigorously declare for them. It has been well said, that "Any one called upon to feed an infant during the period it is normally nourished by its mother has a great responsibility thrust upon him, and one not to be assumed lightly or without preparation. Too many are satisfied when something that is retained in the stomach and causes a gain in weight is found, no thought being given to whether the food contains material out of which healthy tissue can be formed."

There are many ways or methods of feeding infants, and it must not be understood that any *one* is the only one or the best; doubtless all have their place, and all have some virtues, while probably *no one* possesses, by long odds, the advantages of the natural, normal way—the human breast. There are three ways of feeding an infant: by the mother's breast, by a wet nurse, or by bottle, or artificial or hand feeding. Feeding from the mother's breast being the natural, is the proper method of nourishing the human infant, and every mother who is able should nourish her child solely from her breast up to the age of nine months, and partially to the end of the first year; or, failing in either limit, as long as possible. The infant should be put to the breast as soon as the mother has recovered from the fatigue of labor—some two to four hours after birth. No milk can be drawn at this early date, but the babe gets a small quantity of colostrum which affords sufficient nourishment, and from its laxative properties, clears out the intestinal canal. This, too, is of great advantage to the mother, for it insures proper uterine contraction, draws out the nipples and encourages the formation of milk. Put the child to the breast every two hours while the mother is awake, and up to the fourth day there need be no fear of starvation. Usually on the fourth day, or before, milk is secreted and regular lactation commences. Before this time the administration of gruel or any form of artificial food is more than useless, as it lessens the actual suckling and frequently deranges the stomach. Many untrained mothers make a failure

of nursing because they know nothing of the manner of giving it, of the length of time a child should be kept at the breast, at the proper time for, and the interval between feeding, and the importance of regularity. Usually during the first six weeks the breast is required every two hours from five A. M. to eleven P. M., and in most cases, once during the night; but this night nursing should be given up as soon as possible that the mother may secure a proper amount of sleep. Regularity in meal hours is most important, and a little perseverance will form the habit of waking to take the breast with almost the precision of the clock; like most rules, this rule has its exceptions, some infants requiring food less, others more frequently. After the sixth week the interval between nursing may slowly increase, until by the fourth or fifth month it reaches three hours. During this period also, the time of lying at the breast may be gradually lengthened, for the quantity of milk secreted and the child's appetite and capacity for feeding are all augmented as the days pass by. At the end of the sixth or eighth month feeding every four hours suits some children well, but, as a rule, the three-hour interval must be adhered to from the fourth month to the end of lactation. After the sixth or eighth month mixed feeding—breast and bottle feeding alternating—is often advisable if the babe ceases to thrive on the breast alone. Otherwise, the maxim of not interfering with any course that is doing well is as applicable here as elsewhere, and the breast may be relied upon entirely until the time comes for weaning. The date of weaning cannot be fixed for all occasions, since it depends upon the health of the mother and the development of the child. When the former continues to be robust and the child steadily grows and gains flesh, lactation can be prolonged until the tenth or twelfth month. If persevered longer, the mother's strength begins to fail, her milk is lessened in quantity or becomes poor in quality and, as a result, the nutrition of the child suffers.

There are many mothers, however, who, no matter how willing or anxious, are absolutely unable to nurse their babies, and a great many also in whom the secretion of milk fails after a few weeks or months of lactation; then resort must be had to a wet nurse or to artificial feeding. The advantage of feeding by a wet nurse is that the mother's milk is substituted by the milk of another woman—in other words, natural feeding is continued—a matter of moment in all cases, and particularly in the case of

delicate children. The disadvantage consists in finding a woman belonging to the class from which wet nurses come, with all the necessary moral and physical conditions essential, and in the fact that a stranger is introduced in the household who may on slight provocation leave her charge to fate or the tender mercies of another of her kind. For these reasons alone it is usually preferable to trust to careful bottle feeding.

Breast milk is the food intended to nourish an infant and to promote its development. There is no question about preparing a substitute that will contain as much nourishment, but to procure one that will not cause digestive disturbances or fail in promoting normal development is, as you are all doubtless aware by more or less sad experience, a difficult matter. The reason *why* a substitute food does not agree I fear is often not looked into, and perhaps while we as well as the babe are fretting with our milk mixtures, the mother, taking the advice so freely given by her ever solicitous neighbors, changes to one of the proprietary foods, and presto! the change we have sought has occurred, as far at least as results are apparent to the mother it has occurred, for the infant may stop vomiting and at once gain in weight, and the happy parent lauds the food and discharges her doctor. But we, in our infinite wisdom, know that whatever food a child keeps down and which causes a gain in weight is not always a proper one, and in many instances, particularly in the case of many prepared foods, even fleshy babies drift into rickets or are unable to withstand a serious illness and die. In other words, the proportion of the fat-forming elements are so much increased that the infant rapidly gains and lays on fat, while the proteid or muscle-producing elements, from which body resistance is obtained, are low, and such an infant is susceptible to disease, and when once attacked its weakened system is unable to stand the extra strain.

What a difference a too small amount of protein in the food of a growing animal will have on the tissues and health of the adult has been shown by experiment. It has been noticed that pigs that were fed on a diet rather low in protein readily succumbed to disease. They were fat, but when slaughtered yielded a relatively small amount of lean meat or muscular tissue. To determine the effect of rich or poor protein diet on the bones and tissues, Henry and others made some extended experiments. A number of healthy young pigs were selected; part were reared on a diet low in protein and the others on a diet high in protein.

At maturity both lots were slaughtered and their bodies analyzed. The following figures from Henry will give an idea of the immense advantage to a growing animal in a diet high in protein; after an animal has matured there is no such advantage:

Blood per hundred pound weight:

High protein diet..... 51.2

Low protein diet..... 36.8

Liver per hundred pound weight:

High protein diet..... 48.4

Low protein diet..... 31.9

Muscular tissue:

One-third more on high protein diet.

Strength of bone:

High protein diet. Thigh bone broke at 503 pounds pressure.

Low protein diet. Thigh bone broke at 380 pounds pressure.

It will thus be seen that a food that causes gain in weight is not necessarily a good food for an infant. The scales are not a good guide by themselves in judging the development of a child. The problem of infant feeding, however, does not consist simply in supplying proteids and sugar or heat-producing food, neither, as many believe, should it try and do away with the oft-time troublesome curd, as many commercial food manufacturers declare the use of their foods will do. For in recent years, and principally through the writings of Chapin, I believe, this same property of curdling has been shown both theoretically and practically to have much to do in developing the digestive tract. He goes into detail in outlining the belief and says that is the reason why the basis of an infant food must be the milk of some other animal, although there is no milk that has the same curdling properties as breast milk. Though other forms of protein may nourish an infant, they do not cause its digestive tract to develop naturally. He argues further that cow's milk was intended to nourish a calf, that grows much more rapidly than an infant, and therefore contains much more protein than human milk. This protein was also intended for digestion in the stomach and forms solid curds which cannot readily leave the stomach. In an infant, digestion takes place principally in the intestines, and

human milk is especially adapted for easily leaving the infant's stomach. In the calf and cow digestion, which takes place principally in the stomach, is prolonged so when cow's milk is put into the infant's stomach it is not to be wondered at that it slowly leaves the stomach or that curds are vomited or appear in the stools.

To reduce this quantity of protein and also to modify the character of the curd, we are taught to dilute the cow's milk with various substances. This also reduces the fat and sugar and they must be added if the food is to simulate human milk in composition. There have been many recommendations for preparing infant's food, but most of them, I am sure you will agree, have been too easy to forget, or, in the case of calculating special formula for each infant, even burdensome. To be practical, and that usually means to be of use, a simpler method of modification is necessary, and one of the best, I believe, is that I shall here describe. For young infants, remove from the top of a quart bottle, in which the cream has risen, all the cream and enough milk to make nine ounces and mix in a bowl for proper dilution; this is called nine-ounce top milk and the proportion of fats to proteids is 3.1. For older infants, remove from the top of a quart bottle all the cream and enough milk to make sixteen ounces and mix in a bowl for dilution. This is called sixteen-ounce top milk, and the proportion of fats to proteids is 2.1. For removing the cream and top milk, a dipper, which may be procured of any instrument maker, is of great service and insures accuracy. This, I believe, a better method than by siphoning, as this leaves more or less sediment in the bottom which will ultimately find its way into the infant's stomach. For young infants one part of the nine-ounce top milk should be mixed with three to eight parts diluent and one part of sugar added to twenty or thirty parts of food. For older infants, one part of the sixteen-ounce top milk should be mixed with one or two parts of the diluent and the same proportion of sugar added, namely, one part to twenty or thirty of food; either granulated or milk sugar may be used. In every instance, begin with a weak solution and gradually decrease the dilution. Any quantity may be mixed from two ounces up to enough for twenty-four hours. If enough is wanted to last all day, it may be mixed in a quart graduate. It is only necessary to remember how many ounces of the top milk and diluent are to be used and to add one part of

sugar for every twenty or thirty of food, regardless of the amount of the mixture. If enough is made up for the twenty-four hours it should be transferred to nursing bottles, plugged with clean cotton and put on ice or in a refrigerator where the temperature is below fifty degrees. This practically inhibits the growth of bacteria. While, of course, no cow's milk is bacteria free, yet we know there is but little danger to the infant unless the bacteria are overwhelming by reason of their number. As to diluents, you have a variety to select from, including plain water, sugar water, the plain cereal gruels or dextrinized gruels. There is much discussion going on as to what constitutes the best diluent. Jacobi has advocated for years the use of cereals on account of their rendering the curds softer, and hence easier of digestion; on the other hand, these have been objected to on the ground that nature was not being followed, as no human breast secreted cereal. This argument, as has been pointed out, is offset by the fact that no human breast has been known to secrete cow's milk, which was intended for so different a digestive tract. All diluents have some effect on the curding of cow's milk. That cereal waters are efficacious there is no denying; but their opponents claim that they get as good results from plain water in most cases. Lime water is usually added when plain water is used and is stated to be for the purpose of rendering the milk alkaline. But let us quote a bit:

"It was formerly thought that cow's milk was acid and that breast milk was alkaline in reaction, and that in modifying cow's milk to imitate breast milk some alkali should be added; lime-water, bicarbonate of soda and carbonate of potassium have been recommended for this purpose. If cow's milk was really acid, as the term acid is generally understood, the addition of sodium bicarbonate should cause an effervescence of carbonic acid gas, which is not the case, for the addition of weak acids to fresh milk, containing sodium bicarbonates, causes a brisk effervescence of gas which shows that the milk had not decomposed the soda. By careful examinations of breast milk and cow's milk, it has been found that both will take considerable quantities of limewater to render them alkaline to phenolphthalein. Breast milk requires eight to twenty-four per cent. and very best cow's milk, fifty to ninety-five per cent. The conception of acids and alkalies and the methods of detecting them have undergone a great change within the past few years with more knowledge of

chemistry, and it is now known that litmus paper is a very unreliable, unscientific reagent to use in making comparison of breast milk and cow's milk. The so-called radical difference between human milk and cow's milk of alkalinity and acidity has disappeared and it is known that alkalies added to cow's milk prevent the stomach secretions from acting on the milk so as to form curds. In other words, the addition of alkalies to cow's milk for infant feeding has the effect of enabling the food to leave the stomach quickly and to pass into the intestines in a soft or fluid condition. The addition of alkalies to milk should be applied to the individual case as indicated and not necessarily be made a routine measure."

When the bowels move naturally, wheat, rice or barley should be used as they have but a small amount of residue. If, however, constipated, oatmeal by reason of its property of stimulating the bowels can be used to advantage; sugar is not added to sweeten the mixture, but to supply heat-producing food.

The nine-ounce mixture, above referred to, is suitable in dilutions given up to four months, and the sixteen-ounce mixture up to the ninth or tenth month. After this, the food is prepared by shaking the quart bottle of milk when first obtained and using the plain mixed milk.

These directions apply to an average healthy baby; a frail, puny one will need to have the strength of food increased more slowly, while a strong, robust baby may have the strength increased more rapidly. By increasing or decreasing the number of dipperfuls, the food can usually be adjusted to the child's digestion. Thus, in beginning the feeding of an infant, give every two hours, two ounces of a mixture of nine-ounce top milk with eight parts of diluent, and add one-twentieth ounce of sugar, and watch the effect. The absence of colic, restful sleep and normal stools would indicate that the mixture agrees. Then gradually decrease the dilution until the food is one-quarter nine-ounce milk. Then substitute sixteen-ounce top milk and use one part with two of diluent, and finally equal parts of this top milk and diluent. By this method the infant's digestive tract is gradually accustomed to digest the curds of cow's milk; but not until a mixture that is one-third to one-half top milk is used does the infant get as much proteid as a breast-fed baby.

It is impossible to give the exact quantity to be fed at different ages. The best that can be done is to start with a general idea

of the quantity required by the average infant at different ages, and begin with a weak mixture and work up to a point of toleration as rapidly as possible. The stomach capacity as determined by filling the stomach of a cadaver is no real guide, as it should be remembered that some of the food leaves the stomach almost as soon as it reaches it, and few babies would be satisfied with the amount as thus determined.

Unless absolutely necessary, no infant should be left on a mixture containing less than one-fifth top milk for any length of time, as the proteid is too low in quantity. Here dextrinized gruels are of particular value, as they increase the amount of proteid.

The food should always be warmed before giving the baby the bottle, and this can be done by placing for a few minutes in hot water, the milk afterward being tested by dropping a few drops on the arm or wrist, thus avoiding giving too hot. The nipples should be of pure rubber to allow of easy stretching, and thoroughly cleansed and kept in a solution of boric acid or soda bicarbonate. Two or more should be used, thus allowing plenty of time for cleaning. The same may be said of the bottles. The nipples should never be put in the nurse's or attendant's mouth, as is so frequently done to see if it "feeds." The position of the infant during nursing should be as natural and comfortable as possible; and not over twenty minutes should be allowed for taking food. Regularity in feeding is as essential here as in breast-feeding, and the hours should be written down for the mother or nurse. The need of water should never be forgotten, and the cry of thirst should not be confounded with the cry of hunger. Cool boiled water between nursings several times a day is needed, and should always be offered. Nothing else, however, is permissible.

The infant should be weighed each week and a record kept of its weight. If all is going well, there should be a steady gain. If there is no decided gain, and the infant shows no sign of discomfort or indigestion, use a stronger food—that is, more top-milk and less diluent. If the infant is restless at night, or one or two feedings is vomited, omit the top-milk, simply giving the diluent, which will give the digestive tract a rest, at the same time maintaining the infant's strength. This is especially to be commended during the warm weather. Should the vomitus be sour-smelling or rancid and the vomiting occurs shortly after

feeding, cut down the fat-residue by using weaker top-milk, and reduce the sugar one-half.

The subject of Pasteurization or peptonization of milk is important, particularly where fresh milk cannot always be obtained, or where the temperature cannot be kept below sixty degrees. Then it is best to Pasteurize, and the details of this I shall not go into as it is, or should be, familiar to all. When conditions are such that the regular method cannot be carried out, the bottle-milk immersed in water may be brought to a boil, then covered and allowed to stand for twenty minutes and then cooled.

Sterilizing milk is not employed as much as formerly, as the taste of the milk is altered and chemical changes also occur; also, there are no distinct advantages that offset these changes.

Peptonized and partially peptonized milk are valuable adjuncts to the infant's dietary. The latter is perhaps preferable, as the bitter taste is avoided, and many infants will refuse the food if fully peptonized. Peptonization means the predigestion of milk and depends upon the digestive ferment pancreatin. Fairchild's preparation contains this ferment, soda-bicarbonate and milk sugar. The mode of employment is to empty into a dish the contents of one of their tubes; add four ounces of cold water, shake and add one pint of cool fresh milk and shake again. Place the bottle or dish in very warm water for ten minutes and place on ice to prevent further digestive action. This milk is likely to taste bitter.

To partially peptonize, prepare as before, but set on ice without warming. This should not have a bitter taste.

The diet during the second year is quite as important as the first, as this represents the period of transition between the breast or bottle, and the ordinary mixed diet of later childhood. The rapid growth of the child and the cutting of teeth are new features added, and require some watching. Cow's milk should still form the basis and most abundant article of diet. The common mistake in feeding at this time is to allow too great a variety, thus overtaxing the digestion.

At the end of the first year we may start with one soft, semi-solid meal during the day, this to take the place of one bottle. As the infant becomes accustomed to this, showing an ability to digest this kind of food, a second similar meal may be substituted. Among the articles allowed now, a few may be mentioned.

Fruits of various kinds, such as orange juice, apple sauce, or the soft part of baked apple and stewed prunes after the pulp has been squeezed through a sieve. These are not only digestible but have a good effect on the bowels.

The nutriment of vegetables is enclosed in cellulose, which even the mother cannot digest, except to a slight extent. Therefore, vegetable foods for infants should be thoroughly well-cooked to burst open the indigestible cells. Only the tender vegetables or cereals should be used.

A thin mixture made by soaking stale breadcrumbs or zweiback in hot water and adding this to milk makes a good beginning for spoon food. A very soft boiled fresh egg, with or without stirring with bread or cracker crumbs is also permissible. The cereals, thoroughly well cooked, salted and covered with milk make a good meal. Oatmeal, perhaps, is to be preferred from a nutritional standpoint as well as its favorable action on the bowels, although some infants object to it and will not take it. When used, it should be cooked for hours, and I advise putting on the night before and cooking until breakfast time. Meat broths, preferably those made from mutton or chicken, can be used after the first year of life.

Between eighteen months and two years meat may be cautiously given. Small amounts of scraped beef, rare roast beef, broiled steak, roast lamb, white meat of chicken and fresh fish may all be employed. The only precautions are to have the meat fully minced and use sparingly at the beginning. At about this time potatoes, baked thoroughly, peas, asparagus tips and boiled onions may be allowed. It may not be too much to again add that all vegetables should be very thoroughly cooked.

The use of the proprietary foods I have avoided, and I confess as a result of ignorance. Personally I have used them but little, and I neither commend or condemn them.

NOTE.—I wish to acknowledge due credit to Drs. Starr and Chapin, from whose work I have quoted liberally and literally.

THÉOPHRASTE RENAUDOT, PHYSICIAN, PHILANTHROPIST AND JOURNALIST.

By CHARLES GREENE CUMSTON, M. D.,

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In the December 15, 1906, issue of the *Journal of the A. M. A.* appears an editorial entitled "The First French Publicist," the subject being Théophraste Renaudot. Since this ill-known and yet remarkable man has caused this editorial to appear, it occurred to the writer that a short sketch of a portion of his life's work might be acceptable and is the only excuse for the presentation of this paper.

The subject of this sketch and his work have recently been brought to light in two very excellent monographs, the first published in 1884, from the pen of the late Dr. Gilles de la Tourrette, and the second by Dr. André Bégué, which appeared in 1889; Guy Patin's witty letters also give much information, as well as "Les Médecins au temps de Molière," by Raymond.

Among Théophraste Renaudot's "innocent inventions," which from the social standpoint present much general interest, there is one whose application and generalization at the present time is not without considerable importance from the medical view point, properly speaking. I refer to his charitable consultations. To give a sketch of the life of Renaudot would merely be a repetition of what has already been written by Gilles de la Tourette, and consequently I shall limit this study to his free consultations, as well as to the numerous law suits to which he was subjected in order to defend his work against his numerous and powerful enemies. The possessor of an observing mind, Renaudot, after having received the bonnet of doctor at the Faculty of Medicine of Montpellier in 1606, when only nineteen years of age, as he tells us in his "Réponse à l'auteur du libelle contre les Consultations charitables," decided to pass some time in travel, for he says: "Knowing that age is necessary in order to authorize a physician to practice, I employed several years in travelling, both within and outside of this Kingdom, in order to gather what I could find of the best in the practice of this art."

Where Renaudot traveled nothing of a precise nature can be said, but it would appear very probable that he passed some time in Paris during the year 1606, as was later affirmed by Chenvot,

a lawyer of the Faculty of Paris in the trial of December, 1643. Since Renaudot tells us that he traveled for study, it is most probable that he frequented the Faculty and the hospitals just as any provincial or foreign student would do when visiting the capital. What must have struck him was the large number of patients which encumbered the hospitals and the multitude of those who, on account of the lack of care and help, were reduced to begging and perhaps even given up to death. At the Hôtel-Dieu, which was frequently used as a night shelter for the poor, one frequently met with several patients in the same bed. As soon as a patient was admitted, the priest, who had as functions the spiritual master, at once received his confession of faith, and Protestants and Jews were, from this fact, excluded from the hospitals. The liberal conscience of Renaudot, who was still a Huguenot at this time, was probably greatly shocked at this sad condition of affairs.

Renaudot probably also visited the Confrerie of the Surgeons of Saint-Côme, whose headquarters were near the church of the same name, in the rue de la Harpe, and it is here that the idea of remedying the miseries that he met with at each instant came to his mind. Every Monday of each week the surgeons of Saint-Côme in a body gave a gratuitous consultation and dressed the wounds of the patients who came. These consultations dated back many years, and for a long time the surgeons of Saints Côme and Damien appear to have had in the city of Paris the very enviable privilege of giving gratuitous care to the poor patients of the capital. The oldest document concerning gratuitous consultations appears to be a decree issued by King Charles V, dated July 21, 1370, at his Chateau of Saint Pol. This ordinance, which governed the form of the oath taken by the surgeons of Paris, and accorded them an exemption from the guard and other offices, on account of the care that they gave to the poor, is thus written: "*Et ex habundanti, attento quod dicti exponentes se sponte offerunt pro nobis et remedio animi nostri, nostrorumque predecesorum et in futurum successorum, gratis visituros et preparaturos pauperes, qui in hospitalibus recipi non possunt et qui eorum visitationibus et remediis indigebunt, volumus et eis concedimus, ut ipsi ad dictos vulneratos seu eorum vulnera et plagas revelandas, aliter quam superius, in suis privilegiis per Nos, seu nostros predecessores, eis concessis, de quibus vobis licuit aut liquebit, est cautum.*"

"Datum in Hospicio Nostro Sancti Pauli, die XXI mensis julii, anno Domini millesimo trecentesimo septuagesimo, regnique nostri septimo."

Later, in 1544 in the month of January, we find the letters patent of Francis I rendered in favor of the surgeons and exempting them from all taxation "à la charge que tous les premiers lundis des mois de l'an, d'eulx trouver en l'Église parochiale des Saints Côme et Damyne, rue de la Harpe, en nostre Université de Paris et y demourer depuis dix heures jusqu'à douze, pour visiter et donner conseil, en l'honneur de Dieu et sans rien en prendre, les pauvres malades, tant de nostre dite Ville de Paris, que aultres lieux et endroits de nostre Royaulme, qui se présenteront à eux pour avoir ayde et secours de leur art et science de cyrurgie."

The consultations which, in the beginning, were held in the Church itself, took place later in a special building, as is proved by a decision of Parliament, dated Wednesday, November 19, 1561. "La Cour a permis à monsieur Claude Versoris, curé de Saint Côme et Saint Damien à Paris, et aux marguilliers et paroissiens de la dite église, de jouir des bulles de nôtre Saint Père le Pape, à eux accordées pour la construction du bâtiment, en la dite église et enclos d'icelle, pour accommoder les pauvres qui, chacun lundi du mois, sont par les chirurgiens et barbiers de la dite Ville, visitez, pansez et médicamentez et icelles bulles et indulgences faire publier selon la concession de ce faite par l'Évesque de Paris." In his "Histoire de Paris," Abbé Lebeuf expresses himself as follows, in speaking of the Confrerie of Saint Côme: "Cette compagnie a toujours reconnu ces saints martyrs pour ses patrons et la visite a toujours estée continuée et même s'y est faite avec encore plus d'exactitude depuis que Nicholas Langlois, un des anciens prevots des chirurgiens en 1555, laissa un fonds de cinquante livres de rente, pour animer cette visite, dont le produit fournit encore à present une legère retribution aux officiers en charge et aux douze plus anciens maistres qui y assistent, et quelque gratification au concierge pour allumer du feu dans la chambre, lorsqu'on est obligé, dans la saison froide, de demailloter les enfants pour les visiter et remedier à leurs infirmités."

It is quite certain Renaudot saw in these gratuitous consultations of Saint Côme the embryo of the charitable consultations

that he was soon to establish in his Hôtel du Grand-Coq, in the rue de la Calandre.

When he had returned from Loudun, Renaudot commenced to practice medicine, and, putting to profit the experience acquired during his travels, he wrote his *Traité des Pauvres*. The title would appear to indicate that at this time Renaudot was pre-occupied in improving the care given gratuitously to poor patients. In 1609 Leclerc du Tremblay, more familiarly known under the name of Père Joseph, or of "Son Eminence grise," came to Lencloytre, near Loudun, whose diocese had as its chief the Bishop of Luçon, who later on was to become Cardinal de Richelieu. Both of these men realized the qualities of Renaudot and the services that he would be capable of rendering and, consequently, upon his return to Paris in 1610, Father Joseph called upon Renaudot to come to the capital in order that he might be presented to the new King, and, upon this occasion, he expressed himself as follows: "J'ay receu, l'honneur d'estre mandé exprès par Sa Majesté, du lieu de ma demeure, éloignée de cent lieues, des son heureux advenement à la couronne, pour contribuer par ce peu que j'avoie d'industrie au régleme[n]t des pauvres de son royaume."

During this second stay in Paris, which as yet was not to be definite, since Renaudot returned to Loudun in 1612, he received the following patent:

"Aujourd'huy, quatorzieme jour d'octobre 1612, le roi estant à Paris, désirant qualifier et favorablement traitter Théophraste Renaudot, l'un de ses médecins ordinaires, lequel Sa Majesté, sur l'advis qu'elle a eu de sa capacité, a fait venir exprès en cette ville pour s'employer au régleme[n]t général des pauvres de son Royaume, Sa dite Majesté pour les bons et agréables services qu'il lui a rendus et pour les frais de ses voyages, lui a fait don de la somme de six cents livres, dont il sera payé constant par le tresorier de son espargne, auquel est mandé ce faire par et en vertu du present brevet. Par lequel, en outre, Sa Majesté a accordé audit Renaudot et aux siens ou qui auront droit de luy, les permission et privilege, exclusivement à tous autres, de faire tenir bureaux et registres d'adresses de toutes commoditez reciproques de ses sujets, en tous les lieux de son royaume et terres de son obeissance qu'il verra bon estre ensemble; de mettre en pratique et établir toutes les autres inventions et moyens par

lui découverts pour l'emploi des pauvres valides et traitement des invalides et malades, et généralement tout ce qui sera utile et convenable au règlement desdits pauvres, avec defences à tous autres qu'à ceux qui auront pouvoir exprés dudit Renaudot, d'imiter, alterer, ou contrefaire ses dites inventions en tout ou en partie, ny mêmement les dits bureaux, registres et tables d'adresse et de rencontre, à peine de six mille livres d'amendes, applicables en tiers à Sa dite Majesté, un autre au denonciateur, et l'autre tiers au dit Renaudot, auquel Sa Majesté veut toutes lettres necessaires en estre expediées en consequence du present brevet, qu'elle a pour ce signé de sa main et fait contresigner par moy son conseiller, secretaire d'État de ses commandements et finances.

Signé: Louis.

Par le Roy, le Reyne regente, sa mère, presente: de Lomenie."

This patent was not final, and before Renaudot was appointed general commissioner of the poor of the Kingdom, he was obliged to wait for this patent to be approved by the King's Council, in the first place on October 30th, 1617, and on February 3, 1618, by the State Council. In spite of everything, Richelieu, who was Renaudot's protector, did not attain power until 1624, so that the latter did not come to Paris permanently until this year, and, up to that time, he practiced medicine in his own country, as he tells us in the following paragraph: "Ce qui reste de medecins fameux du Poitou dira si j'avais quelque'employ, voire si ma reputation etait mediocre en cet art—J'ai encore pour tesmoin tout le Loudunois, et la noblesse d'alentour ou s'etendait l'exercice de ma charge."

As soon as he had settled in the capital, Renaudot founded his address bureau, in the house of the Grand-Coq, rue de la Calandre, near the Palais. This house had an exit near the Marché-Neuf, which, according to Cousin, formed one of the most animated and lively corners of Paris during the 17th century; from morning to night could be heard his excellent jokes which gave joy to the inhabitants of that time and glory without rival to the repartee of Paris, consequently a neighborhood like this was excellently situated for the address bureau. From the very beginning Renaudot simply busied himself with finding places for servants and valets, second-hand sales and other "innocent inventions," which are of no particular interest to us. But in 1630 appeared an Inventaire du Bureau d'Ad-

ressés, in which, like a kind of profession of faith, Renaudot exposes his innocent inventions. The 21st paragraph, which speaks especially of charity consultations, is as follows: "Les pauvres artisans et autres menues gens malades, qui, faute d'une saignée, ou de quelqu'autre léger remède, encourent souvent de longues et perilleuses maladies, qui reduisent souvent leur famille à l'Hôtel-Dieu, trouveront icy l'adresse de médecins, chirurgiens, et apothicaires, qui, sans doute, ne voudront pas ceder à d'autres l'honneur de consulter, soigner, et preparer gratuitement quelques remedes à ces pauvres gens qu'on leur adressera; mais au contraire se trouvera une aussi grande emulation entre ceux-ci à exercer cette charité qu'en leurs autres actions, qui leur fera envoyer leurs noms au Bureau pour estre employez à ce bon oeuvre, comme ils en sont icy priés."

Consequently, as we have already shown, the principle, in itself, does not appear to be an innovation due to the inventive mind of Renaudot; far from desiring to diminish in the slightest the merit of an institution so generous and so useful, it would appear to me that Renaudot organized and rendered popular charity consultations and that this is an exact and precise definition of his work.

We have already shown how the consultations were organized up to 1630, as well as the gratuitous care given to the poor of the City of Paris. On the one hand hospitals insufficient in every possible way, although new establishments had been recently founded, such as the Pitié in 1612, the Hospice of the Misericorde in the Faubourg St. Marcel in 1623, and the Hôtel-Dieu had itself been increased in size by the addition of a new ward built on the Pont-au-Double, and an annex on the opposite wing on the Seine. On the other hand there were the surgical consultations of the Confrerie of Saint-Côme, but they did not give as much service as might be thought; they were not frequented by patients, and then again they were merely for surgical affections, because, under no pretext could a barber-surgeon practice medicine. From the very commencement of his charity consultations, Renaudot was obliged to struggle; already having been attacked, not without considerable violence, on account of his address bureau, his Gazette, and his sales, it was now necessary for him to defend himself against the Faculty Medicine of Paris. He resisted as long as his powerful protectors lived, but he

succumbed after their death and his enemies, jealous, envious and finally triumphant, took up his work and glorified themselves to the extent almost of leading the public to believe that they were the founders of it. After many incidents, which up to this time had prevented Renaudot from carrying out his consultations regularly, he received from Louis XIII, on September 2, 1640, the following letters patent:

"Louis, par la grace de Dieu, Roy de France et de Navarre, à tous ceux qui ces presentes lettres verront, salut:

"Nôtre très cher et bien aimé Théophraste Renaudot, docteur en médecine, l'un de nos conseillers et médecins ordinaires, maître et intendant général des Bureaux d'adresses de France, s'étant de longue main employé à la recherche de plusieurs inventions et moyens pour l'emploi des pauvres valides et traitement des invalides, et généralement à tout ce qui est utile et convenable au règlement des dits pauvres: pour lequel nous l'avions mandé exprès des le mois d'octobre 1612; et à iceluy permis et accordé par nôtre brevet du dit jour, de mettre en pratique et établir toutes ses dites inventions; avec defense à tous autres qu'à ceux qui auront pouvoir exprès, de les imiter, alterer ou contrefaire; mesme iceluy pourvu de la charge de commissaire général des pauvres de nôtre royaume, par arret de notre conseil d'État du 3 février 1618: le dit Renaudot n'aurait pas seulement vaqué à la perquisition des secrets et choses les plus cachées es l'art de médecine dont il fait profession depuis trente-cinq ans: mais encore, depuis l'établissement des dits Bureaux d'adresses, reçu en iceux toutes les personnes curieuses qui y font experience de plusieurs inventions utiles au public et particulièrement aux dits pauvres: lesquels y reçoivent gratuitement conseil et assistance, en leurs maladies et incommodités, par la charite des médecins, chirurgiens et apothicaires qui s'y assemblent à cette fin. Et d'autant qu'une partie d'experiences qui s'y font des rémedes tires des plantes, des animaux, et minéraux, pour la preparation desquels il est obligé de tenir toutes sortes de fourneaux, alambics, matrats, recipients et autres vaisseaux de chymie et spargyrie, pour extraire, par les operations du dit art, toutes sortes d'eaux, huiles, sels, magisterées, extraits, quintessences, chaux, teintures, régales, précipités, et généralement tous les autres effets dudit art de chymie, lesquels se trouvent fort utiles à la guerison des maladies, lorsqu'ils sont methodiquement administrés selon les preceptes de la médecine;

desirant favoriser cette louable institution et donner sujet à ceux qui auront quelque invention utile au public de ne l'en vouloir pas frustrer, mais plutôt lui en faire voir l'expérience ;

" Nous avons, par ces presentes signées de notre main, permis et accordé, permettons et accordons à tous ceux qui auront quelque invention ou moyen servant au bien et soulagement des dits pauvres tant valides que malades et invalides, mesmement quelque remède tiré des vegetaux, animaux et minéraux par le régime du feu ou autrement, le pouvoir faire en la maison dudit Renaudot et en sa presence et non ailleurs. Et à cet effet, avons permis au dit Renaudot de tenir chez lui les dits fourneaux, et y faire toutes sortes d'opérations chymiques servant à la médecine seulement.

" Si donnons en mandement à nos ames et feaux, les gens tenans notre cour des Monnoies que ces presentes ils fassent enregistrer et du contenu en icelles pour ledit Renaudot, nonobstant toutes oppositions, appellations, et empeschemens quelconques. Et voulons qu'au Vidimus d'icelles, dument collationnées par l'un de nos ames et feaux conseillers et secretaires, foi soit ajoutée comme au present original. Car tel est notre plaisir. En tesmoing de quoy, nous avons fait mettre notre scel à ces dites patentes.

" Donné à Chantilli, le deuxieme jour de septembre l'an de grace 1640, et de notre regne le 3^{me}.

Louis.

" Registre en la dite cour des Monnoies ; ouy sur ce le procureur general du Roy le 25 septembre 1640.

De Laistre."

For already two years Renaudot did not cease to have differences and annoyances with the Faculty Medicine of Paris; this body could not tolerate that a physician from Montpellier could come, not only to establish himself in practice in Paris, but still more to give free instruction and gratuitous consultations. The Faculty, opposed to all progress, could not tolerate without injury a man as progressive as Renaudot. In 1638, as it could not attack the father, it took in hand his two sons, Isaac and Eusèbe, who had been inscribed upon the rôle of students at the Faculty for two years, and when they were ready to pass their baccalaureate, they were compelled to sign the following terms before being permitted to take their examinations:

" Par devant les notaires gardenottes au Roy notre Sire, au

Chastelet de Paris, furent présents, MMss Isaac et Eusebe Renaudot frères, maistres ès arts en l'Université de Paris etudians en médecine, demeurant rue de la Calande, au Grand Coq, paroisse St-Germain le Vieil. Lesquels ont promis à Messieurs de la Faculté de Médecine de cette Ville de Paris, qui l'ont ainsi requis d'eux: Qu'aux cas qu'ils aient l'honneur d'etre reçus en la qualité de bacheliers de la dite Faculté et autres degrés d'icelle, comme ils l'esperent et les en supplient, ils n'exerceront point aucune des fonctions du Bureau d'adresses, ainsi s'adonneront entièrement à l'exercice de la médecine. A quoy ils se sont obligés sous l'hypothèque de tous et chacun leurs biens.

"Ce fut fait et passé après midy, en l'estude de Parque, l'un des notaires soussignés, le XXI e jour de mars mil six cent trente-huit et ont signé la presente:

"Isaac Renaudot, Eusèbe Renaudot, de Troyes, Parque."

Although Renaudot must have been perfectly well aware of the condition of mind of the Faculty relative to himself, he nevertheless continued his gratuitous consultations and, on March 27, 1639, the Faculty, seeing the ever increasing success that Renaudot was having, caused to be placarded in the streets and squares of Paris the following notice:

"Les doyen et docteurs de la Faculté de médecine font scavoir à tous malades et affligez de quelque maladie que ce soit, qu'ils se pourront trouver à leur college, rue de la Bucherie, tous les samedis de chaque semaine, pour être visitez charitablement par les médecins deputez à ce faire, lesquels se trouveront au dict college, et ce, depuis les dix heures du matin jusqu'a midy, pour leur donner avis et conseil sur leurs maladies, et ordonner remèdes convenables pour leur soulagement."

In spite of all this these consultations were not put in practice until the first of June, 1644; they took place in the upper rooms of the Faculty and were given by six doctors, three of which were elders and the other three recently received; the bachelors recorded the consultations.

In 1640 Renaudot published a small work entitled "Les Consultations charitables pour les Pauvres Malades," dedicated to Monseigneur de Noyers, Secretary of State. In this book, which may be considered as a second profession of faith,

Renaudot in the first place explains that three kinds of clients consulted :

"1. Les uns sont riches et accommodés, . . . ils exercent fort volontiers la liberalité de quelque chose qu'ils destinent à faire médicamenter les pauvres, qui n'est pas la moitié de ce que leur coûterait ailleurs une consultation ;

"2. Les autres sont si peu accommodés, qu'ils n'ont pas moyen de faire aucune charité, toutefois leur pauvreté ne va pas jusqu'à avoir besoin d'aumône, et n'est pas telle qu'ils ne puissent pas avoir de quoy payer à leur apothicaire et chirurgien les remèdes qu'on leur a ordonnés . . . ;

"3. Les troisièmes sont de pauvres mendiants ou qui se sont retenus de mendier par le seule honnêteté, lesquels avec l'ordonnance reçoivent, ou leur chirurgien ou apothicaire pour eux, la somme à laquelle on a composé pour leurs remèdes, les faisant ressouvenir qu'ils travaillent pour des pauvres, sur lesquels ils se doivent simplement indemniser de leur débourse. En quoi, j'ay véritablement à me louer du zèle et affection que les maîtres chirurgiens et apothicaires de cette ville ont jusqu'ici témoigné en toutes les occasions, qui se sont présentées de servir les pauvres . . . Les consultations se donnent suivant l'ordre d'arrivée des malades, qui s'y trouvent quelquefois en telle affluence que les médecins consultants sont contraints de se partager en deux ou trois bandes, afin de leur donner plus prompt secours, sans faire attendre leurs ordonnances qui se font seulement en latin et se mettent, par le malade ou par celui qui est la de sa part, entre les mains de son chirurgien ou apothicaire pour l'exécuter."

The consultations at this time were greatly in vogue in Paris ; about fifteen physicians, all friends of Renaudot, came together each week and, each having his table, the patients were brought in according to their number and order. When a case of more than usual difficulty appeared, several physicians came together and each gave his opinion, after which a prescription was given to the patient, who took it to the apothecary to be filled. In the consulting room was a box, in which patients having some little money could drop in a contribution, the product of which served to furnish medicines gratuitously, or even to give money to those poor patients who were in need of it.

Greatly irritated to see the growing clientèle and the reputation of Renaudot increasing constantly, the Faculty of Medicine,

at that time having as dean Guillaume du Val, began to redouble its ardor in the struggle. On November 6, 1640, it prohibited Renaudot to assemble physicians in his house and to practice in the City of Paris. One month later, December 8, 1640, the dean and his predecessor, Simon Bazin, and René Chartier, the Censor, went together to Monsieur de Noyers, who was obliged to promise them that he would act as advocate for the School and present the case to Cardinal de Richelieu. Bouvard, first physician to the King, was also solicited and promised his help; while awaiting a better result the Faculty avenged itself on Isaac and Eusèbe Renaudot, and it proclaimed that, on account of the serious injury caused by their father, they could not be admitted to the public acts of the Faculty. Richelieu, seeing that things were becoming complicated, resolved to intervene, and, acting upon this decision, he called the dean to him in order to withdraw the decision rendered against Renaudot's children, who in no way should be obliged to carry the weight of paternal iniquity, and he added: "Aussi, vous voudrez bien les recevoir, et les conserver dans le sein de votre Faculté. Je me chargerai, du reste, de prier, le chancelier Sequin de couper court à toutes poursuites contre Renaudot, et cela en raison du désir que j'ai de voir regner la concorde. Mais n'ayez crainte, votre Faculte recevra tel accommodement que l'honneur de ses membres, que je tiens en estime plus que personne, en sortira sain et sauf."

Instead of quieting matters this incident, on the contrary, only made affairs more complicated, and, as they had no other measures to take legally against Renaudot, as long as he was protected by Richelieu, the Faculty commenced a war in which calumny was unfortunately one of the principal means of attack, and for a certain time factums succeeded factums without interruption. In the first place, René Moreau published in 1641 "*La Défense de la Faculté de Médecine de Paris contre son calomniateur. Dediée à Monseigneur l'Eminentissime Cardinal duc de Richelieu.*" This libel, of the most unjust kind, commenced by addressing the basest flatteries to Richelieu, and then the author continues by accusing Renaudot of not being a physician of the Paris Faculty and consequently to have no right to practice medicine in Paris. All this was erroneous, because Renaudot being physician to the King had, from this fact alone, the right to practice in the capital. Further on Moreau insinuated that the charitable consultations rendered no service what-

soever and that, since they had existed, the number of patients admitted to the Hôtel-Dieu was quite as large as before, and he ended by making violent attacks against the Faculty of Montpellier, where Renaudot had studied. To sum up, Renaudot immediately replied to this pamphlet which, upon reading, might appear to be irrefutable, in a pamphlet entitled: "Réponse de Th. Renaudot, Docteur en la celebre Faculté de Médecine de Montpellier, médecin du Roy, commissaire général des pauvres, maistre et intendant général des Bureaux d'adresses de France, au libelle fait contre les Consultations charitables pour les pauvres malades."

According to his custom, Renaudot replied to this libel point by point, as to all others that appeared against him. "My consultations," says he, "date back to 1634 and 1636; more than ten thousand persons can prove that no poor patient has ever been sent away without having been gratuitously helped. You should not criticise so much that which you never cease to wish to imitate. From the very commencement of my institution, I called upon the good feeling of the entire medical corps; one or two doctors of Paris only became allied with me and sent their addresses, while, on the other hand, the physicians of the Faculty of Montpellier replied in numbers."

On Easter, 1641, upon the solicitation of the Faculty, whose consultations were little resorted to by patients, the following notice was read in the churches:

"La charité catholique des docteurs en médecine de la Faculté de Paris, pour les pauvres malades, après la messe devotement célébrée, la recitation des litanies de la très sacrée Vierge Marie, mère de Dieu, et l'invocation des Saints et Saintes qui, de profession et de charité, ont de leur vivant exercé la médecine, laquelle Sainte messe est chantée tous les samedis et les dictes litanies et prières le seront désormais en la chapelle de la dite Faculté à dix heures du matin. Tous les pauvres maladies sont avertis et conviez de la part des doyen et docteurs de la Faculté de se trouver depuis dix heures du matin jusqu'à midy, chaque samedi de l'année, en la salle saute du College de médecine, rue de la Boucherie, pres la place Maubert, pour estre visitez et considerez par les docteurs deputez à cet effet, qui selon la charité accoustumée et ordonnée par decret de la dite Faculté, consulteront pour tous pauvres malades, tels qu'ils soient, et de quelconque ville, lieu et pais qu'ils viennent, de toutes especes de maladies qu'ils ayent et donneront

aux dits pauvres leurs consultations et ordonnances de régime et remèdes propres et convenables par écrit et même leur fourniront et distribueront selon leur pouvoir et petit moyen de la Faculté des médicaments, drogues et compositions nécessaires, bien et fidèlement préparés ; le tout saintement et consciencieusement pour la plus grande gloire de Dieu et le secours et soulagement du public et de tous pauvres affligés de maladies.

“Ainsi conclu et arrêté par décret des doyen et docteurs de la dite Faculté.

Signé: G. Du Val.

Doyen, 1641.”

Guy Patin, the future dean of the Faculty, an absolute enemy of Renaudot, then entered into the fight by publishing his “*Advertissement à Th. Renaudot contenant les mémoires pour justifier les anciens droits et privileges de la Faculté de Médecine de Paris.*” The quotation as follows is quite sufficient to show the tone of this polemic:

“ Nous voyons ces charlatans, soubz pretexte de la médecine, impunement voller la bourse, et bien souvent tuer les pauvres malades par leurs remèdes ; ce qui est pis, c’est que la plupart de ces gens la meinent une vie débordée, fréquentent les bordels, pour faire gagner du mal aux uns et aux autres et s’acquérir de la pratique, et aux femmes et aux filles leur donner des poudres et breuvages abortifs, pour vuider leurs ventres. Nous nous en sommes plains aux magistrats, mais nos remontrances n’ont point été reçues. Il y a là un repaire de brigands ou le beau nez de Renaudot à son aise . . . ”

Although the unceasing fight against Renaudot appeared to take on greater and greater proportions, the latter tried for the third time to conciliate matters, and, on June 14, 1641, the Faculty united examined Renaudot’s proposition to this effect:

“ Le doyen convoqua les docteurs aux comices solennels pour délibérer sur les propositions de Th. Renaudot, qui, presque repentant et cherchant, ainsi qu’il était visible, la grace et l’amitié des docteurs de la Faculté et fortement recommandé par le Cardinal, demandait avec instance et en suppliant que les docteurs de l’École voulussent bien l’honorer d’exercer la médecine en sa compagnie et de consulter avec lui les pauvres et les riches lorsque l’occasion s’en présenterait.

“ Renaudot avait formulé et présenté au doyen, qui les avait

revetues de son sceau et soumises à plusieurs docteurs, de grandes compositions qui devaient donner entière satisfaction à l'École."

This was not sufficient for the Faculty, who replied: "Qu'il était impossible d'accorder à Renaudot ce qu'il demandait; que, s'il avait d'autres propositions à faire, il eut à les formuler et qu'elles seraient discutées par les Comices qui seraient appelés à donner leur avis à ce sujet." On the same day the King, who suspected what might be the reception reserved for the conciliating propositions of his physician in ordinary, rendered the following decision:

"Louis, par la grace de Dieu, Roy de France et de Navarre, au premier des huissiers de nostre conseil ou autre huissier ou sergent sur ce requis: te mandons et commandons que l'arrest cy attaché soubz le contrescel de nostre chancellerie, ce jourd'huy donné en nostre conseil, sur la requeste présentée en iceluy par Théophraste Renaudot, Docteur en médecine et nostre médecin ordinaire, commissaire général des pauvres du Royaume, maistre et intendant general des Bureaux d'adresse d'iceluy, tu signifies aux Doyen et Docteurs en médecine de Paris y denommez et autres qu'il appartiendra, à ce qu'ils n'en prétendent cause d'ignorance; leur fais de par nous défences de faire aucunes poursuites par devant le prevost de Paris et autres juges à l'encontre des Docteurs en médecine consultants avec le dit suppliant pour les pauvres malades, au préjudice de la surseance portée par nostre dit arrest: et pour son entière execution dans les autres actes et exploits nécessaires, sans demander autre permission: car tel est notre plaisir.

"Donné à Paris, le quatorzieme jour de juin, l'an de grace mil six cent quarante et un, et de nostre regne le trente-deuxieme.

"Signé pour le Roy et son conseil.

Fayet,

Et scellé du grand sceau de cire jaune."

This royal decision was placed the next day before the dean of the Faculty by Renaudot's direction. The Doctors of the School at last seeing that their process was lost, decided on June 25th, that: "puisque'on ne pouvait faire autrement, on defererait le procez pendant contre Renaudot et les medicastres gazetiers devant le susdit Conseil royal.

"A tout hasard, elle invitait le Doyen à aller saluer le chance-

lier et à remettre la cause entre ses mains équitables, ce que fit celui-ci, accompagné de Mes. Chartier, Heliot, Merlet et autres."

Finally Renaudot had the satisfaction to see his work freely prosper and the charitable consultations gain still further in reputation and success, and the number of patients who came to the address Bureau for salutary advice daily increased. Then Renaudot collected together in a small factum all the decisions which demonstrated the legitimation of his free consultations, and, at the end of this same factum, he invited patients to consult him in the following terms:

"Or pour rendre cette feuille autant utile au public et à chacun en particulier, comme les autres (qui parlent de nouvelles souvent plus éloignées, mais tous les jours moins nécessaires) contentent sa curiosité, vous serez avertis que tous malades sont reçus ceans à venir ou envoyer consulter leurs maladies, les mardis de chaque semaine, depuis les deux heures après midy, jusques à six heures du soir, et qu'ils y trouveront nombre suffisant de docteurs en médecine, maistres chirurgiens et apotiquaires, pour départir charitablement le conseil, les operations, et les médicamens aux pauvres malades, et le conseil tant seulement à ceux qui n'auront pas besoin d'autre assistance.

"Comme aussi ceux qui, ne s'y pouvant transporter y enverront, soit heures et jours susdits, soit à toutes les autres heures de la semaine, y trouveront quelques-uns de ce nombre qui les iront visiter jusques chez eux.

"Charité qui doit enflammer les coeurs d'un chacun à prier Dieu d'un zele ardent pour la prosperité des armes du Roy et donner un avant goust des biens que Dieu reserve à la France quand elles lui auront donné la paix; puisque, dans le trouble et la confusion qui accompagnent ordinairement la guerre et parmi laquelle, selon le dire ancien, les lois ne sont pas écouttées, la pieté du Roy et de ses ministres n'oublie pas le soin des sujets de Sa Majesté plus pauvres et incommodez, memses en la plus pressante de leurs necessitez qui est la maladie."

Renaudot's charity was not limited to gratuitous consultations either at his Hôtel du Grand-Coq, nor to visit patients at their homes when their afflictions prevented them from coming to him; it inspired in him a book which he entitled "*La Presence des Absens.*" This title, which upon first thought may appear peculiar, is to be easily explained. In point of fact it was published

in 1642, at the time when Renaudot could have thought himself free to practice his noble profession in all tranquillity. The exact title of this work is as follows: "La Presence des absens, ou facile moyen de rendre présent au médecin l'état d'un malade absent. Dressé par les docteurs en médecine consultants charitablement à Paris pour les pauvres malades. MDCXLII."

In the preface the author explains that free consultations should not be a privilege confined to Paris, and still more, one day a week for consultations was quite insufficient, and that the same might be said of visits made by physicians of the Bureau to patients' houses. From this time on three consulting physicians, at least, would be found at the Bureau from ten in the morning until noon and they were at the disposal of both the rich and the poor. The second chapter, having for title "Utilitez de ce livre," commences as follows:

"Ceux qui ne voudront; ou ne pourront pas faire venir les médecins chez eux, soit pour en estre trop eloignes, on n'avoir pas le moyen de payer le voyage de ceux ausquels ils se confient et qui ne se pourront on ne voudront transporter chez eux, trouveront icy de quoy suppleer à ce defect: n'y ayant aucune des remarques et demandes que les médecins ont accoustumé de faire à leurs malades et d'où ils prennent leurs indications qui n'y soit employée.

"Par ce moyen, plusieurs pauvres malades ne seront plus destituez de conseil, comme ils sont dans la compagne et dans les lieux ecartez des grandes villes: ce qui tourne au grand préjudice de plusieurs, pour ce qu'ils sont contraints de commettre le traitement de leurs maladies à des apothicaires, chirurgiens et barbiers demeurant aux villages, qui ne sont toujours pas suffisamment instruits pour bien décrire une maladie ou ses accidents, à faculté de quoy les malades meurent souvent de maladies, au commencement légères et curables si elles estoient bien traitées, voire, qui pis est, sans avoir donné ordre à leur asme, ni à leurs affaires domestiques, pour n'avoir pas present le peril ou ils estoient.

"Il y a plusieurs maladies honteuses, qui empechent les malades de se decouvrir et, par cette timidité, se rendent incurables: au lieu que par ce livret chacun pourra, en taisant son nom, qui ne sert de rien à la cure des maladies, en rapporter un bon et salutaire avis."

This little treatise is most complete, and Renaudot thus explains the division of it: "Et pour ce que dans l'examen des choses

que le médecin doit savoir pour bien connoître une maladie et lui ordonner les remèdes bien à propos, il y quelques considérations communes à tous les deux sexes et d'autres particulières à chacun d'iceux; elles seront divisées en trois chapitres; le premier sera commun à tous les deux sexes, le second sera pour les masles, le troisieme pour les femelles."

A patient possessing this book had only to consult the Table of Contents and there look for the disease with which he thought himself afflicted, and this referred him to one of the outlines of certain conditions which accompanied the volume, and here he only had to underline those symptoms which he had remarked, as follows:

"La personne pour laquelle on demande avis tient sa naissance. D'un père de longue vie, mediocre ou brieve, ou bien qui vit encore sain ou qui a esté incommodé de douleur de teste, de paralysie, d'apoplexie, de haut mal, de poulmo, d'hydropisie, de gravelle, de pierre, de colique, de mal vénérien, de goutte, d'hémorroides, de lepres, qui l'a engendré en sa jeunesse, en son age virile ou eu sa vieillesse;

"D'une mère de longue vie, mediocre ou courte, encore vivante, saine ou qui a esté incommodée, de douleurs de teste, de paralysie, d'apoplexie, de haut mal, de poulmo, d'hydropisie, de suffocation de la matrice, de gravelle, de pierre, de colique, de maladie venerienne, de goutte, d'hémorroides, de lepres, qui l'a engendré en sa jeunesse, en son age moyen, ou vers sa vieillesse.

"Quant à sa constitution, elle est mediocre, robuste, au faible.

"Est de stature fort haute, moyenne, ou fort petite, d'habitude grasse, grassette ou maigre.

"Est facile ou difficile à emouvoir ou purger par en bas.

"Est facile ou difficile ou indifferent à prendre remèdes liquides ou solides.

"Vomit facilement, difficilement, ne vomit jamais."

All the words underlined apply to the patient requesting a consultation. Renaudot kept exact account of the age of the patient, and pushed it even so far that he endeavored to find out not only the number of months and days, but the hours as well. He also asked, which is far more important, the exact part where the patient considered himself ill, a description of the disease and an examination of the urine. Four figures are to be found in the text representing a head, a man and a woman seen in full

face, and the human body from the back. These figures were used by the patient to indicate the precise location of his disease, and correspond somewhat with the figures now found on modern clinical charts.

After having devoted the first two chapters, the first to males, the second to girls and women, Renaudot then takes up those diseases which are common to both sexes, such as tumors, wounds, ulcers, fractures and dislocations, all of which were treated in a very minute manner.

Until the death of Cardinal de Richelieu, which occurred on December 4, 1642, Renaudot had a few difficulties with the School. On the one hand he brought suit for defamation of character against Guy Patin, in conjunction with Louise de la Brosse, the daughter of the great naturalist, but both were expelled from the Court and their suit discontinued. On the other hand, the Faculty made all possible difficulties for Renaudot's two sons to receive the bonnet of doctor.

After the death of his protector, Renaudot perhaps could still count on the aid of Louis XIII, the royal collaborator of the Gazette, and he asked him to authorize him to erect a hotel for charitable consultations near the Port Saint-Antoine. In the midst of this populous quarter, Renaudot had in mind to render still greater services than he had been able to up to this time in the house of the Grand-Coq, which had become too small for its purpose. He offered to put up the building at his own expense, and his demand was sent "aux tresoriers généraux de France, qui prirent l'avis des maîtres des oeuvres publiques, et tant les uns que les autres, après plusieurs descentes sur les lieux et avoir ouy les voisins, certifierent la commodité que le public en recevrait." After this examination de commodo et incommodo, Renaudot received letters-patent from the King giving him authorization to construct his building. This took place in 1643. Guillaume du Val had been succeeded by Michel de la Vigne as dean. The Faculty, greatly put out from the fact that Renaudot was succeeding in his enterprise, decided to bring a suit against him on January 9, 1643, and, in order to give larger dimensions to the struggle, which was about to begin, it endeavored to rally around its cause all those which might be of use; thus Bouvard, first physician to the King, and who had been admitted into Renaudot's confidence, did not hesitate to tell the Faculty all that he had learned. Then, again, the University

and other prominent personages of Paris were added to the list. It was only on July 16, 1643, after the death of Louis XIII, the last and weak upholder of Renaudot, that the dean and seven doctors went together before the chancellor to make a complaint, which had been made out by Guy Patin and Charpentier in these terms:

"Au Roy et à Nosseigneurs de son Conseil.

"Sire:

"Les doyen et docteurs en médecine de la Faculté de Paris vous rémonstrent très humblement, qu'encore que leur profession merite, pour son importance, d'estre réglée avec grand soing, particulièrement en la Ville de Paris, capitale du Royaume, et en laquelle il y a l'Université des plus célèbres de l'Europe, néantmoins de désordre y seroit plus grand dans leur profession, qu'en aucune autre ville; plusieurs éstrangers, sans tiltres, sans degrés, sans lettres et sans adveu, entreprenant impunement le dict exercice soubz pretexte des assemblées et consultations charitables du Bureau d'adresses, par lesquelles on abuse de la credulité des simples au grand prejudice du public: dont les supplians ayant cru estre obligés par devoir d'informer le Prévost de Paris, juge naturel des parties et auquel la cognoissance des points de police appartient, lui auroient présenté request, sur laquelle commission leur auroit esté accordée pour faire assigner M. Théophraste Renaudot, auteur de ces désordres et patron de toute la cabale, lequel, au lieu de s'y prester et pour faire cognoistre qu'il n'est nullement méthodique, se seroit pourveu au Conseil, ou, par divers arrests d'iceluy des 4^e de juin et 9^e de juillet 1641, il auroit fait retenir la cognoissance du differend des parties et ordonne qu'elles contesteroient au principal pour leur estre fait droit: ce qui ne serait raisonnable, soubz le bon plaisir de Votre Majesté, puisque le Conseil ne prend connoissance regulièrement que des matières, sur lesquelles on ne se peut pourvoir devant d'autres juges; que le Prévost de Paris est le premier juge et naturel des parties, ou le Parlement de ce qui vient en execution des réglemens qu'il a donnés en ce sujet oultre qu'il seroit contre l'ordre, que toutes les contestations que les supplians peuvent avoir avec semblables personnes fussent portées au Conseil, qui en seroit trop importune:

"A ces causes, Sire, à vous plaise, sans avoir égard aux arrests des 4^e de juin et 9^e de juillet 1641, ordonner que les parties se

pourvoiront sur tous les differends devant le prévost de Paris et par appel au Parlement. Et les suppliants continueront leurs prières pour la prospérité et conservation de Votre Majesté.

“ Michel de la Vigne, doyen de la Faculté.”

In order that their request might be taken into serious consideration by the Regent, the plaintiffs were very careful to place before Anne of Austria an issue of the Gazette, dated June 4, 1633, in which it was a question of herself, and on August 7th they received the following notice:

“ Le Roy, en son Conseil, faisant droit sur la requeste, sans s'arrester aux arrests du Conseil des 4 juin et 9 juillet 1641, a renvoyé et renvoye les doyen et docteurs de la Faculté de Paris, leurs procès, et differentes circonstances dépendantes, par devant le Prévost de Paris, pour estre réglés et fait droit, ainsi qu'il appartiendra par raison.

“ Faict au conseil privé du Roy, tenu à Paris, le septieme d'aout 1643.”

From this time on the Faculty was sure of Renaudot's ruin, and, on the 9th of December, 1643, it obtained the following decision from the Prévot of Paris:

“ A tous ceux qui ces presentes lettres verront, Louis Segulier, baron de S.-Brisson, sieur de Ruaux, général et garde de la Prévosté de Paris, salut:

“ Scavoir faisons que, sur la requeste faicte en jugement devant nous au Chatelet, par Maistre Estienne de Droict, procurer des doyen et docteurs régents en la Faculté de médecine de Paris, demandeurs en exécution d'arrest du conseil du 7 d'aout dernier, suivant leurs moyens signifiés le trentieme jour le septembre, en suivant, a l'encontre de Me. Anthoine du Puys, procureur de M. Th. Renaudot, soy disant médecin et par default de nous donné contre le sieur du Puys, non comparant, ni aultres pour lui, vers l'arrest du Conseil cy-dessus datte portant le differend d'entre les parties renvoyées par devant nous, l'exploit d'assignation au sieur Renaudot, en execution des arrests du douzieme du mois d'aout, les réquestes et demandes de demandeurs signifiées le trentieme jour de septembre, nos jugements des quatrieme et vingtieme jours de novembre dernier et premier de ce mois, ensemble de venir playder à ce jourd'huy faute au sieur du Puys le 7^{me} de ce mois, et ouy les gens du Roy en leurs conclusions:

“ Nous faisant droict sur les demandes des demandeurs, avons faict et faisons inhibitions, et defenses au sieur Renaudot et à ses

adherents et adjoints soy disants medecins, d'exercer cy après la médecine ny faire aucunes conferences, consultations, ny assemblées ou dans le Bureau d'adresses, ou aultres lieux de cette ville et faulxbourgs, ny de traicter et panser aucun malade soubz quelque prétexte que ce soit, à peine contre les contrevenants de cinq cents livres d'amende, en paiement desquelles il sera contraint, et en cas d'assemblée, permettons aux sieurs demandeurs de faire transporter le premier commissaire de la Cour de ceans en la maison ou elle se fera pour containdre les contrevenants au paiement de le susdite amende, le tout nonobstant opposition. ou appellation quelconque, pour lesquelles ne sera differé et sans prejudice d'icelles, et condamnons le sieur Renaudot aux depens, et soit signifie.

"En tesmoing de quoy, nous avons faict sceller ces presentes du scel de la Prévosté de Paris: ce fut faict et ordonné par mesire Dreux d'Aubray, conseiller du Roy en ses conseils et lieutenant civil de la Prévosté, tenant le siege, le neufviesme jour de decembre mil six cents quarante et trois."

During the successive decisions which condemned Renaudot, the latter, in order to defend himself and once more make the last effort, addressed the Queen in a document where, from the beginning, he destroyed the accusations brought against him by his enemies, a paragraph from which I quote:

"Tout ce que j'ai pu avancer depuis ce temps-là, Madame, après les beaux réglemens par moi proposez, pour qu'il n'y ait plus de mendiants valides en France, est d'avoir procuré par la charité du roy defunct, une place pour y Bastir à Mes Depens un hostel, dans lequel les grandes foules de malades, qui viennent recevoir Gratuitement chez moy, depuis plusieurs années, le conseil de quinze ou vingt medecins et les remedes à leurs malades, seroit plus au large et plus commodement reçue. Plus de vingt mille personnes qui en ont senti le soulagement et qui le ressentent encore tous les jours peuvent tesmoigner que les avenues de mon logis sont d'ordinaire tellement occupées de ces pauvres malades qu'elles sont devenues de difficile acces à toutes autres personnes."

In ending, the author points out to the Queen that the Duke and the Duchess d'Uzes, being opposed to the erection of the Hotel for charitable consultations at the place desired, begged her Majesty to indicate "d'aultres lieux pour y bastir, et qu'en attendant j'essaierai de soutenir les grands frais que chacun s' imagine

pour trouver de quoi fournir gratuitement les remèdes nécessaires à tous les malades qui en auront besoin, et auxquels il ne couste rien qu'à les demander." An anonymous writer was not long in replying to this request, reproaching Renaudot of having been brought up in the pretended reformed religion, as well as some other physicians connected with him in his work. He also pointed out in his argument that Renaudot had no need of a new building, and that the physicians of Paris did charitable work as well. To all these arguments, which, in their form, had an appearance of moderation, he added another of a different kind. The title of a pamphlet, which appeared at about 1643, will in itself allow one to readily understand the vigor of the invectives thrown at the unfortunate man.

"Le nez pourry de Théophraste Renaudot, Grand Gazetier de France et espion de Mazarin, appelle dans les chroniques: *nebulos hebdomadarius de patria diabolorum*.

"Avec sa vie infame et bouquine, recompensée d'une vérole éuripienne, ses usures, la décadence de ses Monts de Piété, la ruine de tous ses fourneaux et alambies (excepté celle de sa conférence retablie depuis 15 jours par la perte de son procez contre les docteurs de la Faculté de médecine de Paris). Sur le nez pourri de Théophraste Renaudot, alchymiste, charlatan, usurier comme un juif, perfide comme un turc, méchant comme un renégat, grand fourbe, grand usurier, grand gazetier de France."

From December 9, 1643, to February 15, 1644, nothing new occurred in the procedure engaged in by the Faculty against Renaudot, and it was only at the latter date that the dean and thirty doctors appeared before Parliament to plead the cause of the Faculty, but the affair was put off for a week, that is to say, until February 23d, and a second hearing took place the 29th of the same month. During the trial, public opinion seemed to be entirely favorable towards Renaudot, and his defense was presented by his lawyer Battaille, while that of the Faculty was represented by one of the greatest lawyers of the time, Chenvot. Other parties intervened in the trial. Isaac and Eusèbe, who had not as yet received the doctoral bonnet, to which they had been entitled for sometime, were defended by Pucelle; the Rector and other members of the University by Deffita, and lastly the Faculty of Montpellier, who, for the first time, entered into a struggle with the School of Paris, had its cause pleaded by Martin. The advocate-general, Omer Talon, who spoke last, concluded to

throw out the appeal, and the Court condemned Renaudot on every point, rendering the following decision:

“La Cour a reçu et recoit les parties de Deffita et Martin intervenantes, et, y faisant droit ensemble sur les appellations, sans avoir égard aux lettres, a mis et met l'appellation au néant; ordonne que ce dont a esté appelé sortira son plein et entier effect; condamne appellant en l'amende, et es depens; a ordonné et ordonne que dans la huitaine la Faculté de Médecine s'assemblera pour faire un projet de règlement pour faire les consultations charitables et iceluy apporter à la Cour pour, iceluy veu, ordonner ce que de raison; et, sur les conclusions du procureur general, a ordonné et ordonne: que Renaudot presentera à la dite Cour les Lettres patentes, adressées à icelles, par luy obtenues pour l'établissement du Bureau et permission de vendre à grace; et cependant lui a faict très expresses inhibitions et defenses de ne plus vendre ny preter à l'avenir sur gages, jusqu'à ce que aultrement par la Cour en air esté ordonné; et que les officiers du Chastelet se transporteront chez le dict Renaudot pour faire inventaire des hardes qui se trouveront en sa maison, pour les rendre et réstituer à quy il appartiendra; et, sur la requete des parties de Pucelle, y sera faict droit separement, ainsi que de raison.

“Faict en Parlement, le premier jour de mars mil six cent quarante-quatre.”

This judgment was the last blow that Renaudot received, and the Faculty, in order to consecrate its final victory, obtained from Parliament the following edict:

“Sur la requeste présentée à la Cour par les doyen et docteurs regens de la Faculté de Médecine de cette ville de Paris, contenant; qu'en l'exécution de l'arrest d'icelle du premier mars dernier, confirmatif des sentences du Prévost de Paris, la dicte Faculté de Médecine s'estant assemblée, et faict un règlement pour les Consultations charitables des pauvres en date du 22^e du dict mois de mars, lequel ils auroient apporté à la Cour, requerant l'exécution d'iceluy et veu le dict arrest et projet, conclusions du Procureur general du Roy; tout considerer, la dicte Cour, ayant egard à la requeste, a ordonné et ordonne que, suivant le dict projet de la Faculté de Médecine, six medecins d'icelle Faculté, scavoir trois du nombre des anciens et trois de celui des jeunes, se trouveront aux écoles precisement à dix heures du matin tous les mercredis et samedis de chacune

semaine, estant advertis auparavant par le billet du bedeau, et la, estans avec de doyen et plusieurs aultres docteurs qui s'y rendent ordinairement ils visiteront et examineront diligemment et exactement les maladies de chascun des pauvres et ordonneront les remèdes propres et convenables, et, s'il se rencontre quelque difficulté pour ce qui regarde la connoissance ou le traictement de ces maladies, ils confereront et consulteront les uns avec les autres, donneront aux pauvres les receptes ordinaires des remedes par éscript, et les remedes desquels pour lors qu'ils auront besoing, gratuitement et aux despens de la Faculté: jusques à ce que, par liberalité des gens de bien et de condition, la dicte Faculté puisse menager quelque fonds plus grand pour les pauvres. Et pour le regard des malades qui ont besoing d'opinion nouvelle, les susdits docteurs auront soing de faire eux-memes, ou faire travailler en leur presence quelque bon chirurgien: et se comporteront au pansement et soulagement des pauvres malades ainsi qu'ils sont obligés. Et, afin que la maladie d'aucuns pauvres ne puisse estre negligée, s'il y a aucun par la ville qui ne puisse marcher et ne soit pansé comme il faut, le doyen de la Faculté en estant adverty, y donnera ordre, et fera en sorte que chacun sera assisté du medecin et de l'apothicaire.

"Et sera le present arrest affiché à toutes les rues et carrefours de cette ville et faulxbourgs, à la diligence du procureur general."

We thus see that in this edict the Faculty seized Renaudot's work, and on June 4th following it commenced its gratuitous consultations in one of the rooms of the School. From this time on the unfortunate Renaudot had nothing further to do than editing his journal, and the last document that can be quoted relative to himself was the necrological article that the Gazette published on November 1, 1653:

"Le 25 du mois dernier, mourut au 15^e mois de sa maladie, en sa 70^e annee, Théophraste Renaudot, conseiller, médecin du Roi, historiographe de Sa Majesté; d'autant plus recommandable à la posterité que, comme elle apprendra de luy les noms des grands hommes, qu'il a employés en cette histoire journalière, on n'y doit pas taire le sien, d'ailleurs assez célèbre par son grand scavoir et la capacité qu'il a faict paraistre pendant cinquante ans dans l'exercice de la médecine, et par les autres belles productions de son esprit, si innocentes que, les ayant toutes destinées à l'utilité publique, il s'est toujours contenté d'en recueillir la gloire."

A few days later Guy Patin wrote to one of his friends: "Le vieux Théophraste Renaudot mourut icy le mois passé, gueux comme un peintre." A supreme injury, but what a magnificent eulogy for one who had dreamed of the extinction of pauperism and after his death was the object of such an apostrophe.

Editorial

I have been credibly informed and am inclined to believe, that the various Boards of Directors of Railway Companies, those gigantic jobbers and bribers, while quarreling about everything else, agreed together some ten years back to buy up the learned profession of medicine, body and soul. To this end they set apart several millions of money, which they continually distribute judiciously among the doctors, stipulating only this one thing, that they shall prescribe change of air to every patient who can pay or borrow money to pay, a railway fare, and see their prescription carried out. If it be not for this, why is it that none of us can be well at home for a year together? It wasn't so twenty years ago,—not a bit of it.

THOMAS HUGHES.

Tom Brown's School Days



The After Care of the Insane

In the ANNALS of July, a year ago, notice was given of the beginning of an effort to promote the welfare of patients discharged from public hospitals for the insane. The conditions of hardship which contribute to the causes of attacks of insanity not infrequently face the victim after his restoration by the superior care of the institutions and relapses may be expected. A sub-committee of the State Charities Aid Association has been organized to carry into effect a plan for protecting these unfortunate patients from a repetition of disaster, and in the Fourteenth Annual Report of the Association to the State Commission in Lunacy this sub-committee makes its first annual report. The plan of organization is the appointment of After Care Committees for each State hospital, which is to co-operate with the hospital management under the following plan of procedure:

"1. The Hospital is to notify the Committee of cases likely to

be discharged, as soon as such discharge seems reasonably certain, preferably from a week to a month before the patient is likely to leave the Hospital. The Hospital is to furnish the Committee at that time with a summary of such facts in connection with the history of such patient recommended for supervision as will be of assistance to the Committee in the investigation of the case, including the name, age, nativity, creed, occupation, civil condition, date of commitment, previous commitments, form of insanity, character, habits and tendencies and previous history and circumstances of the patient, and the names and addresses of the patient's relatives and friends, the character and condition of the home and the number in the family so far as known.

"2. The Hospital is to notify the Committee of the final discharge, or discharge on parole, of every patient within forty-eight hours of such discharge, and to furnish at this time particulars regarding the case, if such particulars have not been previously furnished.

"3. The Hospital is to notify the Committee if it learns of a likelihood on the part of any former patient to relapse, or of the desirability of assistance or advice in preventing a relapse on the part of former patients, whether such patients are on parole or have been finally discharged."

The Hospital After Care Committees undertake to visit through their members, or the agent of the sub-committee, the homes and friends of patients about to be discharged, and to report immediately to the hospital such facts and recommendations as may seem likely to be helpful to the hospital in making a decision as to when and to whom patients should be discharged. The committees also undertake to visit in their homes all patients discharged on parole, who in the opinion of the hospital may need supervision, and to report to the hospital before the expiration of the period of parole such facts as may be of service to the hospital. The committees are ready, at the request of the hospital, to investigate the circumstances of any former patients who have been discharged, recovered, who may be considered by the hospital to be in danger of a relapse, and to require assistance or advice to maintain their physical or mental health.

It appears from the report of the Committee that several cases have been managed with great benefit during the year, at a moderate and not prohibitive expense. In New York City, especially, has the After Care Committee been assisted by many

other charity organizations, and there are indications of widespread general interest. It is important that every available means be utilized to overcome the ignorance and the apprehension felt for patients who have suffered mental attacks, that they may not be made to forfeit any privileges or respect to which they are entitled when restored to the life of the community.

Little Biographies

XIX. VIEUSSENS.

RAYMOND VIEUSSENS, or DE VIEUSSENS, was the son of a military man, and was born in 1641 in the village of Vieussens in the old territory of Rouerge, now mostly contained in the department of Aveyron. Left to his own devices at an early age by the death of his father, Vieussens showed from the first that he desired a student's life. When old enough he entered the university at Rhodéz, where he took his philosopher's degree, and soon after this he began the study of medicine at the then celebrated school of Montpellier. Regarding the date of his graduation nothing is known, but it is on record that he distinguished himself as a student by his application to anatomy. After graduation he established himself at Montpellier, and in 1671 was appointed physician to the Saint Eloy Hospital. For the next seventeen years he devoted his time to perfecting himself in the art of medicine and to the study of anatomy. At the same time he probably acquired a large practice, for Boudin, in a letter published at the beginning of the *Novum Vasorum*, expresses the hope that this will not be permitted to interfere with his scientific work. In 1688 Vieussens was called to Paris to see a patient, and shortly afterwards accepted the post of physician to the Duchess of Montpensier, a position which he held until her death in 1693. He then returned to Montpellier, and resumed his work as physician to the Saint Eloy Hospital. He had doubtless been influenced in Paris by the wave of enthusiasm for chemistry which at that time was on the flow, and, abandoning anatomy for the time, he devoted himself to chemical investigation. The sole result of this seems to have been a long-winded and acrimonious controversy with his colleague Chirac, a gentleman well known for his disputatious tendencies. This squabble, which concerned the reputed acidity of the blood, is said by some

to have ended in a lawsuit. Evidently Vieussens had had enough of chemistry when the affair with Chirac was finally settled, for he returned to the study of anatomy, to which he remained constant until his death in 1715.

Vieussens' reputation must rest upon the work which he did on the anatomy of the nervous system and on the heart. His first and most pretentious work, the *Nevroglia Universalis*, is a folio volume of some 250 pages, containing a complete description of the central and peripheral nervous systems, and an account of their physiology. The work is based upon knowledge gained in the dissection of more than five hundred cadavers, and whilst the text contains errors and the plates are not always accurate, the book is a remarkable one, and should be classed with Willis' work on the brain. The anatomical parts of the book are of much greater value than the physiological, which, as is to be expected, are strongly tinged with the remarkable and grotesque theories of the day. The treatises on the heart, published toward the close of the author's life, give us an insight into his clinical acumen. They show that Vieussens appreciated the relation between heart disease and dyspnoea and dropsy. He describes the symptoms of failure of compensation in mitral stenosis, and also recognizes the *pulsus celer* of aortic regurgitation.

Of Vieussens the man we know little. Astruc describes him as a hard worker, avid of glory, but lacking in the critical faculty. While there is evidence in his works that this judgment is, in the main, correct, it cannot be denied that his work shows real talent, and that he was instrumental in aiding the advance of medical progress in his day. His picture, which appears in the *Nevroglia Universalis*, shows him as rather a pleasant looking man, smooth shaven, regular featured, with wide-set intelligent-looking eyes, a small shapely mouth, and a rather square, determined-looking chin.

GEORGE BLUMER.

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| VIEUSSENS. | <i>Nevrographia Universalis. Hoc est, omnium corporis humani nervorum simul et cerebri, medullaeque spinalis.</i> Lugduni. Joannem Certe. MDCLXXXV. |
| VIEUSSENS. | <i>Novum Vasorum Corporis Humani Systema.</i> Amstelodami. Paulum Marret. MDCCV. |
| VIEUSSENS. | <i>Dictionnaire des Sciences Medicales. Biographie Medicale. Tome septieme.</i> Paris. 1825. |
| ROMBERG. | <i>Die Krankheiten des Herzens und der Gefässe.</i> Ebstein and Schwalbe's <i>Handbuch der praktischen Medicin.</i> Bd. I. 1899. |

Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR MAY, 1907.

Deaths.

	1902	1903	1904	1905	1906	1907
Consumption	24	20	18	21	18	13
Typhoid fever.....	2	0	2	0	0	0
Measles	1	0	0	4	0	0
Scarlet fever.....	0	7	1	0	0	0
Whooping-cough	0	2	1	0	0	0
Diphtheria and croup.....	5	3	0	3	0	1
Grippe	0	7	1	0	0	2
Pneumonia	19	15	18	10	8	9
Broncho-pneumonia	2	3	3	1	7	4
Bright's disease.....	8	10	16	5	19	13
Apoplexy	8	9	2	8	12	6
Cancer	9	7	7	6	14	5
Accidents and violence....	13	5	13	11	3	10
Seventy years and over...	24	28	23	25	32	26
One year and under.....	20	10	13	8	12	9
Total deaths.....	166	151	144	146	159	131
Death rate.....	19.53	17.77	16.94	16.31	18.71	14.82
Death rate less non-residents .....	....	.....	16.00	15.04	16.94	12.67

Deaths in Institutions.

[illegible]

Births at term.....	107
Marriages	64
Still births.....	5
Premature births.....	3

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were three hundred and sixty-five inspections made, of which two hundred and eighty-two were old buildings and eighty-three were new buildings. There were sixty-one iron drains laid, thirty-three connections to street sewers, fifty tile drains, three urinals, forty-eight cesspools, one hundred and nineteen wash basins, sixty-eight sinks, sixty-nine bath tubs, forty wash trays, one butler's panty sink, thirteen trap hoppers in yard, one hundred and fifty-one tank closets, one stable wash stand and one horse trough. There were one hundred and thirty-eight permits issued, of which one hundred and two were for plumbing and thirty-six for building purposes. There were twenty-seven plans submitted, of which twelve were of old buildings and fifteen of new buildings. Thirteen houses were tested on complaint with blue, red, and there were twelve water tests made. Forty houses were examined on complaint and eighty-five were re-examined. Nineteen complaints were found to be valid and twenty-one without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1903	1904	1905	1906	1907
Typhoid fever.....	2	1	1	3	11
Scarlet fever.....	13	15	8	19	10
Diphtheria and croup.....	23	1	8	18	28
Chickenpox	19	3	2	0	7
Measles	168	21	129	3	11
Whooping-cough	1	0	0	3	0
Consumption	2	4	0	3	19
Totals	228	45	148	49	86

Contagious Disease in Relation to Public Schools.

	REPORTED	
	D.	S. F.
Public School No. 1.....	2	
Public School No. 3.....		1
Public School No. 4.....	1	
Public School No. 5.....	2	1
Public School No. 13.....	1	
Public School No. 15.....	1	3
Public School No. 17.....		1
St. John's School.....	1	
Holy Cross School.....	2	
St. Ann's School.....	1	
Cathedral	1	1

Number of days quarantine for diphtheria:

Longest..... 50 Shortest..... 6 Average..... 23 4-33

Number of days quarantine for scarlet fever:

Longest..... 45 Shortest..... 21 Average..... 27

Fumigations:

Houses..... 50 Rooms..... 143

Cases of diphtheria reported..... 28

Cases of diphtheria in which antitoxin was used..... 27

Cases in which antitoxin was not used..... 1

Deaths after use of antitoxin..... 1

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906	1907
Initial positive.....	22	22	2	9	10	27
Initial negative.....	24	25	22	15	18	45
Release positive.....	23	22	1	12	3	92
Release negative.....	24	12	6	4	16	175
Failed .....	....	7	....	....	....	24
Totals	93	88	31	40	47	363

Examinations for tuberculosis:

Initial positive.....	8
Initial negative.....	10

MISCELLANEOUS.

Inspections of mercantile establishments.....	68
Mercantile certificates issued to children.....	16
Factory certificates issued to children.....	12
Children's birth records on file.....	28
Number of written complaints of nuisances.....	72
Privy vaults.....	7
Plumbing	24
Other miscellaneous complaints.....	41
Total number of dead animals removed.....	1098
Cases assigned to health physicians.....	61
Calls made.....	278

BUREAU OF MARKETS AND MILK.

Wagons and milk in clean condition.....	7
Wagons and milk in unclean condition.....	0
Ice on cans.....	6
Butter fats below 3%.....	1
Butter fats from 3 to 3.5%.....	3
Butter fats from 3.5 to 4%.....	8
Butter fats over 4%.....	2
Solids below 12%.....	4
Solids from 12 to 12.5%.....	0
Solids from 12.5 to 13%.....	5
Solids over 13%.....	5
Meat condemned.....	0

BUREAU OF MILK.

No.	Specific Gravity. Per Cent.	BUTTER FATS.				SOLIDS.		
		Under 3%	3 to 3.5%	3.5 to 4%	Over 4%	Under 12%	12.5 to 13%	Over 13%
146.....	21.6	..	..	I	..	..	I	..
	30.6	..	..	I	..	..	..	I
20.....	31.2	..	..	I	..	..	I	..
	30.6	..	I	..	..	I	..	..
180.....	33.3	..	..	I	..	..	I	..
	31.6	..	..	I	..	..	I	..
184.....	33.3	..	..	I	..	..	..	I
	32.6	..	..	I	..	..	I	..
27.....	33.7	..	..	I	..	..	..	I
	31.6	..	I	..	..	I	..	..
144.....	30.2	..	I	..	..	I	..	..
	31.6	I	..	..	..	I	..	..
55.....	32.7	..	..	..	I	..	..	I
	30.6	..	..	..	I	..	..	I

Medical News

Edited by Arthur J. Bedell, M. D.

THE ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR MAY, 1907. Number of new cases, 139; *classified as follows*: Dispensary patients receiving home care, 2; district cases reported by health physicians, 14; charity cases reported by other physicians, 64; patients of limited means, 59; old cases still under treatment, 76; total number of patients under nursing care during the month, 215. *Classification of diseases* (new cases): Medical, 45; surgical, 10; gynecological, 2; obstetrical work of the Guild, 41 mothers and 38 infants under professional care; dental cases, 1; skin, 2; 7 contagious diseases in medical list; transferred to hospitals, 5; deaths, 12.

Special Obstetrical Department.—Number of obstetricians in charge of cases, 1; attending obstetricians, 1; medical students in attendance, 2;

Guild nurses, 6; cases, 2; by attending obstetricians, 1; by the medical students, 6; by the Guild nurses, 12; total number of visits for this department, 19.

Visits of Guild Nurses (all departments): Number of visits with nursing treatment, 1,414; for professional supervision of convalescents, 250; total number of visits, 1,664. Eight graduate nurses and 4 assistant nurses were on duty. Cases were reported to the Guild by 3 of the health physicians and by 39 other physicians and by 2 dentists.

UNION COLLEGE COMMENCEMENT.—June 11th, commencement day, was observed in a most enthusiastic manner. Over six hundred were present at the alumni dinner. Report was made of advance in all departments with the announcement of the gift of \$100,000 provided \$100,000 more is raised by the college. This is in addition to the \$200,000 subscribed for during the past year. New life has been given the institution and the future looks bright. Numerous class reunions were held during the week.

ALBANY LAW SCHOOL.—A class of more than forty were graduated in June, one of the largest classes in many years.

ALBANY HOSPITAL.—The Training School for Nurses held the graduation exercises at the Female Academy hall, May 17th. Twenty-six were given diplomas. Addresses were made by Mr. Marcus T. Hun and Dr. Albert Vander Veer.

Dr. Simon F. Cox has resigned the superintendency of the Albany Hospital.

THE MEDICAL ERA'S SPECIAL EDITIONS.—The *Medical Era* of St. Louis, Missouri, will conform to its usual custom and issue its yearly series of special gastro-intestinal numbers embracing July and August. The August-issue will be given over entirely to the consideration of every phase of typhoid fever. The series will contain about 35 or 40 practical papers and will contain a large amount of valuable information.

INDEX MEDICUS—Second Series.—A monthly classified record of the current medical literature of the world published by the Carnegie Institution of Washington. Owing to a demand for copies of volume I. of the second series of the *Index Medicus*, a limited supply of copies of the numbers of this volume have been reproduced.

The complete volume is offered for sale at the regular subscription price—five dollars in the United States, Canada, and Mexico, with sixty cents additional for postage to foreign countries—or the separate numbers may be purchased at fifty cents each.

Orders should be addressed: Carnegie Institution of Washington, Washington, D. C., and subscribers are requested to remit by money order or New York Exchange payable to the Carnegie Institution of Washington.

A CONSUMPTION CATECHISM FOR SCHOOL CHILDREN.—A Consumption Catechism for School Children is the subject of a pamphlet being printed

by the Department of Health of the City of New York for distribution in the schools of the city. Through the help which has been promised by the Department of Education it is expected to get this catechism into the hands of every one of the 600,000 and more children attending the public schools. Another large group of children will be secured it is expected from parochial and private schools. As these cards will bear the imprint—"Take this card home and show it to your family and friends," and as it is planned to have the teachers give this same advice to their pupils, this will prove the most widespread and thorough distribution yet attempted in this country of printed instructions on the subject of consumption.

In a series of thirty-two questions and answers the catechism briefly and simply tells what consumption is, how it is conveyed from person to person, "how you can keep from getting it," "how you can keep others from giving it to you," and how it is cured. Added to the catechism is a list of the associated special tuberculosis dispensaries and a map of the city showing the district allotted to each one of these.

Although the pamphlet is primarily designed for school children it contains much material which will be of help to their parents and older brothers. Such an answer as that given to the question, "What are the first signs of the disease?" will warn many an unsuspecting person that an examination by a competent physician should not be put off. "Loss of strength, cough, fever in the afternoon and loss of weight, sometimes bleeding or hemorrhage of the lungs and the coughing up of sputum or phlegm" are the first signs that the unwary are now told to look for. After describing how one person infects another through the germs which are contained in the spit of the consumptive or in the invisible droplets sprayed out when consumptives cough or sneeze it is stated that those who are sickly or run down from disease, overwork or intemperance and whose systems cannot fight the bacilli are those most likely to get consumption, just as the ordinary cold or cough if neglected is the most common sickness that develops into consumption. Thorough cleaning and disinfection of houses or rooms newly moved into are urged as one essential safeguard against the consumption germs which a careless consumptive may have left in rooms occupied by him.

"Even if the tubercle bacilli get into the lungs of a healthy person they are usually killed there," it is stated, and so the lesson is plain that the first great rule to keep from getting consumption is simply "keep as well as possible." To do this four things are recommended, fresh air, proper food, cleanliness and temperance in all things. If a cough lasts more than two weeks an examination of the lungs by a competent doctor or at a special tuberculosis dispensary is advised. A minimum program for cleanliness is set forth in two warm baths a week and in cleaning house with damp brooms and cloths, while for air it is stated that every study and living room should be aired several times a day and one window in the bed room kept full half open all night.

The catechism in answer to the question, "Is it dangerous to live

or work with a consumptive?" answers, "no, not if he is careful and clean; careful to destroy all the sputum he coughs up and never to spit on the floor or streets." It is said that consumption can be cured if treatment is begun early by good food, fresh air and rest and such medicines as the doctor may prescribe. If a consumptive cannot go to a country sanatorium he is advised to go to a doctor or a dispensary, to keep out in the fresh air and sunlight as much as possible, to keep his windows open day and night and not to waste time or money on patent medicines or advertised cures.

TREASURY DEPARTMENT, BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.—A board of officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B street SE., Washington, D. C., Monday, July 15, 1907, at 10 o'clock A. M., for the purpose of examining candidates for admission to the grade of assistant surgeon in the public health and marine-hospital service.

Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: 1, physical; 2, oral; 3, written; 4, clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination of the various branches of medicine, surgery, and hygiene.

The oral examination includes subjects of preliminary education, history, literature, and natural sciences.

The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

Upon appointment the young officers are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco.

After five years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon.

Promotion to the grade of surgeon is made according to seniority, and after due examination as vacancies occur in that grade.

Assistant surgeons receive \$1,600, passed assistant surgeons \$2,000, and surgeons \$2,500 a year. When quarters are not provided, commutation at the rate of thirty, forty, and fifty dollars a month, according to grade, is allowed.

All grades above that of assistant surgeon receive longevity pay, 10

per cent in addition to the regular salary for every five years' service up to 40 per cent after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses.

For further information, or for invitation to appear before the board of examiners, address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."

INTERNATIONAL CONGRESS ON PSYCHIATRY, NEUROLOGY, PSYCHOLOGY AND NURSING OF THE INSANE, TO BE HELD AT AMSTERDAM, SEPTEMBER 2-7, 1907.

The business of the Congress will be divided into three sections:

I. PSYCHIATRY AND NEUROLOGY.

Presidents: Dr. C. Winkler, Professor of Neuropathology and Psychiatry at the Amsterdam University.—J. K. A. Wertheim Salomonson, Professor of Neuropathology at the Amsterdam University. *Secretary:* Dr. M. J. van Erp Taalman Kip, Director of the Neurotic Sanatorium, Arnhem. *Members:* Dr. K. Heilbronner, Professor of Psychiatry at the Utrecht University.—Dr. A. C. Kam, Med. Officer at the "Meerenberg" Lunatic Asylum, Bloemendaal.—Dr. L. J. J. Muskens, Neurologist at the Hospital for Epileptics, Privaat Docent, Amsterdam.—Dr. G. A. M. van Wayenburg, Privaat Docent, Amsterdam.

II. PSYCHOLOGY AND PSYCHO-PHYSICS.

President: Dr. G. Heijmans, Professor of Philosophy and Psychology at the Groningen University. *Secretary:* Dr. E. Wiersma, Professor of Neurology and Psychiatry at the Groningen University. *Members:* Dr. L. Bouman, Director of the "Bloemendaal," Lunatic Asylum, Loosduinen.—Dr. Phil. C. J. Wijnaendts Francken, the Hague.

III. NURSING OF THE INSANE.

President: Dr. W. P. Ruysch, Chief Inspector of Public Health, the Hague. *Secretary:* Dr. A. M. Benders, Med. Officer at the "Meerenberg" Lunatic Asylum, Bloemendaal. *Members:* Dr. J. C. I. van der Hagen, Inspector of Public Health, 's Hertogenbosch.—Dr. G. C. van Walsem, Director of the "Meerenberg" Lunatic Asylum, Bloemendaal.

The Exhibition will be classified under the following headings:

10. The Exhibits of Dr. C. E. Daniëls, in the City Museum: "Historical documents, relative to former epochs in the history of the treatment of the insane."
20. Loan Exhibits of present-day objects relative to the nursing of lunatics and neurotics.
30. Instruments employed in the psychiatric, neurological and psychological laboratories.

CIVIL SERVICE EXAMINATIONS FOR THE STATE AND COUNTY SERVICE.—The Civil Service Commission will hold examinations July 13, 1907, for the following positions: Assistant in Clinical Laboratory, Manhattan State Hospital, \$900 and maintenance; Electrician, Education Department, \$720; Fireman, Onondaga County Service, \$3 a day; German Interpreter, Kings County Service; Guard, Richmond County Jail, \$3 a day; Junior Clerk (men only), \$360 to \$480; Medical inspector of Factories, \$2,400; Special

Agent, Department of Labor, \$1,200 to \$1,500; Superintendent of State and Alien Poor, State Board of Charities, \$3,000; Superintendent of State School for the Blind, \$2,500 and maintenance; Trained Nurse, State Institutions (men and women), \$420 to \$600 and maintenance; Woman Physician, State Hospitals and Institutions, \$1,000 and maintenance; Examiner of Municipal Accounts, Comptroller's Department, \$8 a day and expenses; Examiner of Values, Transfer Tax Appraiser's Office, New York City, \$1,200.

The last day for filing applications for these positions is July 6th. Full information and application forms may be obtained by addressing the Chief Examiner of the Commission in Albany.

CHARLES S. FOWLER,
Chief Examiner.

Dr. KOCHER'S VISIT TO ALBANY.—Dr. Albert Kocher, the son of Prof. Theodor Kocher, the famous surgeon of Berne, Switzerland, visited the Albany Hospital June 17, 1907, as the guest of Dr. Albert Vander Veer and Dr. W. G. Macdonald. He demonstrated, before a number of the physicians of Albany, his father's method for the removal of the thyroid in a case of goitre, upon a patient of Dr. J. N. Vander Veer. Dr. Kocher, before operating, stated that the great experience of the Clinic at Berne was due to the general prevalence of goitre in Switzerland. He was convinced, however, that no country was free from goitre, as they had had patients from every country and since he had been in America he had seen many cases. They had operated upon over 3,000 patients in Berne and he himself had done 400 operations. The success of surgical procedure depended not alone upon the skill of the operator, but also upon the proper selection of patients for operation and also upon the careful determination of the general physical condition of the patient as a guide to the extent of operative action.

The operation of Billroth differed from that of Kocher in that Billroth removed the capsule with the thyroid, whereas Kocher peeled out the thyroid gland from the capsule and left the capsule. This resulted in diminution of hemorrhage and in preventing injury to the parathyroid glands. In Vienna sixteen per cent of the cases operated upon had tetany while in Berne only four in a thousand. The operation is usually done under a local anaesthetic and at Berne one per cent solution of novocaine with four or five drops of adrenalin in 150 grams of this solution is the anaesthetic employed. A long semi-circular incision is made and the muscles are separated in order to expose the gland. Below the muscles lies the deep fascia which is the capsule of the gland. After the first incision practically no cutting is done and the blunt instruments are almost entirely used. Hemorrhage is prevented as much as possible by clamping every visible vessel.

PERSONALS—Dr. J. N. B. GARLICK (A. M. C., 1903), after serving as resident in the Albany Hospital one year and as Dr. Vander Veer's assistant for two years, has started practice at Schenectady, N. Y.

—Dr. JAMES M. BODDY (A. M. C., 1905) has moved from 321 West 22d street to 615 West 9th street, Little Rock, Ark.

—Dr. JOHN F. ROBINSON (A. M. C., 1906) has taken a position as pathologist to the Mercy Hospital, Pittsburg, Pa.

—Dr. WALTER A. REYNOLDS (A. M. C., 1906), after completing his service as resident physician at the Albany Hospital, has started as Dr. Vander Veer's assistant.

—Dr. THEOBALD F. DOESCHER (A. M. C., 1906) has started his service as assistant pathologist at the Bender Laboratory.

—Dr. MILES J. CORNTHWAITE (A. M. C., 1905) has moved from Rock City Falls, N. Y., to 959 State street, Schenectady, N. Y.

—Dr. R. S. LIPES (A. M. C., 1907) has been appointed assistant resident physician to Dannemora State Hospital, Dannemora, N. Y.

—Dr. JAMES J. SHEA (A. M. C., 1907) has been appointed assistant resident physician at the State Hospital, King's Park, N. Y.

—Dr. ZENAS ORTON (A. M. C., 1907) has been appointed resident physician at the Boston Emergency Hospital, Boston, Mass.

MARRIED.—Dr. HARRY RULISON (A. M. C., 1903) and Miss Potter, of Delmar, N. Y., were married at Delmar, June 19, 1907. Dr. and Mrs. Rulison will reside at 114 Grand street, Albany, N. Y.

—Dr. PERCIVAL W. HARRIG (A. M. C., 1906) and Miss Lotta May Tibbitts were married June 24, 1907. Dr. and Mrs. Harrig will reside at 171 Hamilton street, Albany, where the doctor has opened his office.

—Dr. ADELBERT S. DEDERICK (A. M. C., 1906) and Miss Sarah Garrett, of Newtonville, N. Y., were married June 4, 1907, at Newtonville. After a trip to the Jamestown Exposition Dr. and Mrs. Dederick will live at 352 McClellan street, Schenectady, N. Y., where the doctor has started practice.

DEATHS.—Dr. REUBEN H. BURTON (A. M. C., 1855) died at his home in New York City, April 22, 1907, aged 79.

—Dr. JAMES E. CASEY (A. M. C., 1855) died at his home in Mohawk, N. Y., May 18, 1907, aged 80.

—Dr. GEORGE H. FOSSARD (A. M. C., 1859) died in Brooklyn, N. Y., May 10, 1907, aged 68. Dr. Fossard was an assistant surgeon in the Federal Army in the Civil War.

—Dr. GEORGE ROWE (A. M. C., 1865) died at Gloversville, N. Y., May 8, 1907, aged 68.

—Dr. SYLVESTER D. LEWIS (A. M. C., 1866) died at Syracuse, N. Y., on June 16, 1906, aged 79 years. Dr. Lewis was an alumnus of Union College and the Albany Law School, and lived with his son, Dr. George Griffin Lewis, a graduate of the class of 1890 of the Albany Medical College.

—Dr. DANIEL P. VAN COURT (A. M. C., 1875) died at his home in Mohawk, N. Y., in June, aged 67. Dr. Van Court was a veteran of the Civil War.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS.

The Elements of the Science of Nutrition. By GRAHAM LUSK, Ph. D., M. A., F. R. S. (Edin.), Professor of Physiology at the University and Bellevue Hospital Medical College, New York City. Octavo of 326 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$2.50 net.

This book forms an important addition to the relatively few works which have appeared in English on this topic. The training and life work of the author have rendered him peculiarly fitted to present the experimental data which underlie our present conception of the board subject of nutrition. No better proof of the inestimable good which animal experimentation has rendered for the betterment of mankind can be found than by a perusal of its pages. Only once or twice does there creep in between the covers theories unsupported by staunch experimental data. Medical men of whatever line of specialism cannot afford to neglect the perusal of the many poignant facts presented.

After a somewhat general discussion of the main topics of metabolism and the methods employed in the experimental creation of the fundamental substratum of our knowledge, the author considers briefly the physiology of the feces, emphasizing the importance of the idea that this excretion does not merely represent the refuse from the material ingested, but stands as a true excretion through the walls of the intestine. Since, in a certain sense, the condition of inanition serves as a basis for control of all feeding experiments, the subject of starvation with the influence of various conditions upon the character of the eliminations is next discussed. This is followed by the factors which affect the temperature and its regulation. The chapter on the influence of proteid food upon metabolism and in maintaining an equilibrium is particularly well worth perusal and study. The explanation of the manner in which this class of foodstuffs becomes available as energy or as building material for the body should be of immense value in the deciding of questions in dietetics. The moot point concerning the production of fat from proteid is admirably presented. As a natural sequence there follows the specific effect of the proteids in inducing a very considerable rise in heat production, or as Rübners terms it, the "specific dynamic action" of the foodstuffs. The effect of the ingestion of fat and carbohydrates next invites the attention. The influence of fat on nitrogen retention, the production of sugar from fat, the proteid-sparing action of the fats and carbohydrates—all these form necessary links in the chain of evidence to support the later chapters. The influence of work on metabolism is considered in its relation to the character of diet necessary under the varying conditions of human life. The author discusses a "normal diet," outlining the work of Chittenden and of Atwater and others upon this all-important topic, criticizing some of the conclusions reached by these investigators and still inclining to the older and less modern view held by Voit. The low-nitrogen diet apparently does not appeal to the author in its entirety, although he believes that we

all ingest too much proteid in the form of meat. The next chapter on food requirement during growth makes admirable reading for the pediatrician or for the mother herself.

The subsequent four chapters on metabolism in anemia, at high latitudes, in myxedema and in exophthalmic goitre; metabolism in diabetes; metabolism in fever; purin metabolism—gout, are only interesting in that they strikingly emphasize the value of the experimental evidence for our views on such subjects. As expositions of these topics so frequently discussed and so thoroughly described in books devoted more particularly to pathological chemistry and physiology, the matter is disappointing. A short review of the theories of metabolism closes this excellent book. The appendix contains tables giving the cost of proteids as food, with their caloric value and the composition of the ordinary foods.

H. C. J.

A Manual of Pathogenic Micro-Organisms, including Bacteria and Protozoa. For Students and Practitioners of Medicine and Surgery and Health Officers. By WILLIAM HALLOCK PARK, M. D., Professor of Bacteriology and Hygiene in the University and Bellevue Hospital Medical College, and Director of the Research Laboratory of the Department of Health, New York. New (2d) edition, enlarged and thoroughly revised. In one octavo volume of 556 pages, with 165 engravings and 4 full page plates in black and colors. Cloth, \$3.75 net. Lea Brothers & Co., Publishers, Philadelphia and New York.

This is a convenient volume, of 546 pages with 165 engravings and four full-page plates, intended for the use of students, physicians and health officers. For such it can be most heartily recommended, as it presents a description of the pathogenic bacteria in a most practical and at the same time comprehensive manner. The inclusion of a section devoted to protozoa, written by Dr. A. W. Williams, adds to the value of the work as a text-book, in that it facilitates the presentation of this subject to medical students, for whom no adequate separate work on the pathogenic protozoa has yet been prepared.

Photocopy (Skiascopy or Retinoscopy). By MARK D. STEVENSON, M. D., Ophthalmic Surgeon to the Akron City Hospital; Oculist to the Children's Home, Akron, Ohio. Octavo of 126 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$1.25 net.

The optometric method discussed in this volume is the most important one yet known. A new name is given to it by this author. Such addition to the terminology of the subject does not seem to this reviewer to be justified. The fact that the method has never had a fairly descriptive name is the sole reason for giving it any other name. Dr. Charles A. Oliver's name for the test was objected to because of its length. He called it the "fundus reflex test." This long name is more descriptive than is any other

that has been given to the method and it is by but a single syllable more polysyllabic than the new name proposed by Dr. Mark Stevenson, while it "breaks even" with re-tin-o-scop-y.

The book under consideration furnishes a fairly good presentation of the subject, but is no improvement on Edward Jackson's treatise on it. As to how "scientific" a scientific book would best be, is somewhat a matter *de gustibus* and is best decided with reference to the ability of those who are apt to be its readers. Jackson's work is not objectionably technical, and Stevenson's seems to make a labored effort at simplicity without achieving the end sought. Insistence on details often smacks of mere repetition. As regards the publishers' part, the book is successful.

C. M. C.

The Immediate Care of the Injured. By ALBERT S. S. MORROW, M. D., Attending Surgeon to the Workhouse Hospital and to the New York City Home for the Aged and Infirm. Octavo of 340 pages, with 238 illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$2.50 net.

The author in this volume has attempted to prepare a book that would be useful alike to physicians, nurses and laymen, and at the same time serve as a text-book for the use of First Aid classes. With this object in view the subjects considered have been presented in as simple language as is consistent with clearness, technical terms having been omitted as far as possible. In Part I the anatomy and physiology of the human body have been briefly outlined. Part II is devoted to bandaging, dressings, practical remedies, etc., their methods of application being thoroughly explained. In Part III how to act and what to do in accidents and emergencies are described in detail. The volume contains a large number of illustrations; many of them original.

G. E. B.

Paraffin in Surgery; a Critical and Clinical Study. By WILLIAM H. TUCKETT, B. S., M. D., Attending Surgeon, Harlem Hospital, and FRANK I. HORN, M. D., Assistant Surgeon, Mt. Sinai Hospital Dispensary, New York City. Surgical Publishing Company, New York, 1907.

In this monograph of 118 pages the authors, by an analysis of the literature and a critical study of the results of their own clinical experiences and experiments on cadavers and animals have made an effort to determine some of the disputed points which have arisen since the introduction of paraffin into the domain of surgery. The sphere of paraffin injections, the early and ultimate disposition of the paraffin in the tissues, the technic and armamentarium, the causes of unsatisfactory results, and the accidents that may result are among the topics discussed. It seems from this critical study and the reports of sixty-four cases operated upon by the authors that they have accomplished considerable towards establishing paraffin as an auxiliary in surgery.

G. E. B.

A Manual of Normal Histology and Organography. By CHARLES HILL, Ph. D., M. D., Assistant Professor of Histology and Embryology, Northwestern University Medical School, Chicago. 12mo volume of 463 pages, with 312 illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Flexible leather, \$2.00 net.

This manual of 463 pages presents in a concise way many of the fundamental facts in histology. The descriptions are in most instances incomplete and many important facts are omitted. It contains many good illustrations, a few of which are original. It would seem however that a work of this sort is too superficial and thus has little place either as a text-book or as a guide in laboratory work.

C. E. B.

Organic and Functional Nervous Diseases. By M. ALLEN STARR, M. D., Ph. D., LL.D., Sc. D., Professor of Neurology, College of Physicians and Surgeons, etc. Second edition, thoroughly revised. Illustrated with 282 engravings in the text and 26 plates in colors and monochrome. Lea Brothers & Co., New York and Philadelphia, 1907.

The first edition appeared as a work on Organic Nervous Diseases, and the advances made in neurology in the last ten years justified a thorough revision which has been made by Dr. Starr, who has taken the opportunity to add sections on functional diseases of the nervous system, and to complete the volume. Dr Starr has had a very large experience, of which he has made good use, and he sees distinctly and writes clearly, so that his books have been always well received. His "Organic and Functional Nervous Diseases" is an authority in this department of practice.

An Epitome of Diseases of the Nose and Throat. By J. B. FERGUSON, M. D., of the New York Post-Graduate Medical School. 12mo, 243 pages, with 114 engravings. Cloth, \$1.00 net. Lea Brothers & Co., Publishers, Philadelphia and New York, 1907. (*Lea's Series of Medical Epitomes.* Edited by VICTOR C. PEDERSEN, M. D., New York.)

This little book, as the author states, presents in a concise and practical form the diagnosis and treatment of the various diseases commonly found in the nose and throat.

It will prove a very helpful book to the student who wishes to become familiar with the fundamental principles of nose and throat work in a short time.

At the end of different parts of the work there are a series of very practical questions which should prove useful to the student preparing for examination.

C. F. T.

Thornton's Pocket Medical Formulary. New (8th) edition, revised to accord with the new U. S. Pharmacopœia. Containing about 2,000 prescriptions with indications for their use. In one leather bound volume. Price, \$1.50 net. Lea Brothers & Co., Publishers, Philadelphia and New York, 1907.

This well known book does not need an extended notice, further than to say that the present edition is fully equal to the earlier ones which have been in the hands of physicians for many years.

This edition conforms to the new U. S. Pharmacopœia and consequently many important changes have been made, changes necessitated by the changes in title and strength of standard drugs and also the fact that about 125 new drugs or preparations have been added to the standard list.

The book is thus of special value at this time and will doubtless meet the same gratifying approval that has been bestowed upon the earlier editions.

C. K. W., JR.

A Text-Book of Pathology. By ALFRED STENGEL, M. D., Professor of Clinical Medicine in the University of Pennsylvania. Fifth revised edition. Octavo of 977 pages, with 399 text-illustrations, many in colors, and 7 full-page colored plates. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$5.00, net; Half Morocco, \$6.00 net.

The revised edition of this very satisfactory and practical text-book on pathology contains 979 pages, an increase over former editions, with 399 illustrations in the text and 7 colored plates. The increase in size is largely due to the augmentation of the chapters on Inflammation, Immunity and Animal Parasites which have been largely re-written. In its present form it will undoubtedly continue to be the most satisfactory work, both for the student and the practitioner, that we have on general pathology. For this reason suggestions may be out of place but from the teacher's point of view its value could be enhanced by the introduction of foot notes giving references to the more important discoveries and advances in the fact and theory of pathology. The introductions of new matter under the headings of Pathologic Physiology, wherever possible, would also be advisable, for the paragraphs under these headings constitute one of the most distinctive and stimulating features of the work. Such changes could be made without increasing the bulk of the book by eliminating the entirely unnecessary chapter devoted to Pathologic and Bacteriologic Technique.

A Text-Book upon the Pathogenic Bacteria. For Students of Medicine and Physicians. By JOSEPH MCFARLAND, M. D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. New (5th) edition. Octavo volume of 647 pages, fully illustrated, a number in colors. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$3.50 net.

This, the fifth edition of McFarland's excellent text-book, has been

thoroughly revised. A comparison with former editions shows that much new matter has been added, obsolete theories eliminated, and the chapters on Infection and Immunity entirely re-written. The author has continued his custom of giving footnote references to the original sources of the more important discoveries and theories and in this he should receive the support of all teachers of bacteriology. The opening of such sources of knowledge, in order to stimulate independent reading on the part of the student, should be one of the chief objects of medical teaching. The book remains one of the best of the works on bacteriology limited to a discussion of the pathogenic bacteria.

A Manual of Pathology. By GUTHRIE McCONNELL, M. D., Pathologist to the St. Louis Skin and Cancer Hospital and to St. Luke's Hospital, St. Louis, Missouri. 12mo of 523 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Flexible leather, \$2.50 net.

A compact little manual of about 500 pages in which the important phases of pathology are briefly but clearly given. In the preface the author states the purpose of the volume is not that it shall attempt to take the place of the more voluminous text-books, but that it shall enable the student to rapidly acquire the salient points of a subject. Although he has succeeded in presenting the subject from this point of view, it is doubtful if such manuals are of any value for the student who desires an adequate knowledge of pathology.

SURGERY

Edited by Albert Vander Veer, M. D., and Arthur W. Elting, M. D.

Differential Diagnostic Features of Peritonitis. (Differential diagnostische Kriterien der Peritonitis.)

A. BARTH. *Deutsche medizinische Wochenschrift*, No. 51, 32nd Jahr.

The pathology and symptomatology of peritonitis has only been adequately understood since the era of abdominal surgery. The usual picture of peritonitis that was presented in the older text-books was essentially the picture of death, and not of the disease during most of its course.

The writer has very carefully studied one hundred and seventeen cases of peritonitis, ninety of which resulted from perityphlitis, and believes that he can draw some conclusions from these observations with regard to a differentiation of the origin of the inflammatory process. Pain is practically always an accompaniment of the development of a peritonitis taking its origin from the appendix, but this pain is not due to the actual involvement of the appendix itself, the peritoneum of which has been shown to be practically free from sensory nerves; but it rather

originates from the sensitive parietal peritoneum which is of course involved very early in the process. In the great majority of suppurative processes in the abdominal cavity, the pain which is first felt is due to an irritation of the parietal peritoneum. This pain may be projected to the epigastrium, the umbilical region or other portions of the abdomen. In other cases of appendicitis there is a retroperitoneal lymphangitis which gives rise to an irritation of the retroperitoneal nerves. In addition to this strikingly suggestive symptom, there is a triad of objective symptoms quite characteristic of early peritonitis. They are: Fever, vomiting, and reflex spasm of the abdominal wall. The writer states that some elevation of temperature is absolutely characteristic of the beginning of all acute infections of the peritoneum. The elevation of temperature may last for only a few hours, but usually extends over the first two or three days. Later on it may be entirely absent. No conclusions from the amount of elevation of the temperature can be drawn as to the severity of the infective process, but the presence of temperature is of the very greatest importance in differential diagnosis in such conditions as ileus, ruptured extra-uterine pregnancy, and other conditions.

Only when the abdominal cavity is suddenly overwhelmed with a large amount of infectious material does the pulse rise much above 100 in the early stages or appear of especially bad quality. As a rule in appendicitis at first the pulse remains below 100.

Next to the fever, vomiting is one of the most constant symptoms of an acute infection originating from the appendix. It is a reflex process due to the irritation of the peritoneum either by infectious or non-infectious material. Of the greatest importance is the reflex spasm of the abdominal muscles, which is practically a constant characteristic of peritonitis originating from the appendix. It is absent in cases of serous exudation. Reflex spasm of the abdominal muscles is a local symptom of heightened excitability of the sensory nerves of the parietal peritoneum, and this in general corresponds to the extent of the involved peritoneum. The more toxic the contents of the peritoneal cavity and the more rapidly these toxic contents find access to it, the more pronounced is the muscle spasm. This characteristic is in striking contrast to that which is observed in peritonitis originating from the female genital organs, either gonorrheal or puerperal in origin.

Gonorrheal peritonitis begins with fever and the pulse increases in frequency very much more rapidly than in appendicitis. Usually it is above one hundred in the early stages, and frequently one hundred and thirty to one hundred and forty. Vomiting is not constant. Distention in the early days is, however, more or less constant, but there is comparatively little or no reflex muscle spasm. The picture rather resembles that of an inflammatory process associated with a more or less sterile serous exudate. The local symptoms in gonorrheal peritonitis are apt to be confined especially to the lower portion of the pelvis and are particularly characterized by sensitiveness to touch of the posterior vaginal vault and the uterus. Gonorrheal peritonitis also begins by a special preference at the time of menstruation.

During the past year the writer has never failed to differentiate one condition from the other, although appendicitis and pelvic peritonitis are frequently confused. In appendicitis an early operation is indicated, while in acute pelvic peritonitis early operation is contraindicated. In pelvic peritonitis the early adhesions prevent the extension of the process and a fatal termination is comparatively rare.

Streptococcus puerpural peritonitis resembles gonorrheal peritonitis in the absence of muscle spasm. The distention, however, is usually quite pronounced. Reflex muscle spasm is also absent in abdominal hemorrhage, particularly that due to a ruptured extrauterine pregnancy, although this condition with its distention, pain and vomiting frequently suggests peritonitis.

It, therefore, becomes quite evident that by the employment of the refinements of diagnosis it is possible in a great majority of instances to correctly determine the point of origin of the inflammation.

Concerning a Case of Mikulicz's Disease Treated with the X-rays.
(*Ueber einen mit Röntgenstrahlen behandelten Fall von v. Mikulicz'scher Krankheit.*)

EGON RANZI. *Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie*, Band 16, Heft 4 and 5.

In 1902 Mikulicz described a disease which he believed to be a clinical entity characterized by symmetrical swelling of the lachrymal and salivary glands. The case reported by him was that of a man forty-two years of age, in whom seven years previously swelling of both lachrymal, parotid, submaxillary, sublingual and tonsilary glands developed. As characteristic of this disease Mikulicz emphasized the chronic benign course, the symmetrical enlargement without inflammatory appearances and without involvement of the rest of the organism. He believed that some infectious agent gained access to the gland either through the blood or through its excretory ducts and gave rise to an increase in the volume of adenoid tissue. The condition has been confounded with that of leucemia or pseudoleucemia, from both of which it can be perfectly distinctly separated.

Brunn, in 1905, divided all the cases of symmetrical enlargement of the salivary and lachrymal glands into two principal groups, the one with a normal, the other with a pathological condition of the blood.

The writer believes that the disease should be regarded as a purely local one, although transition forms between this and pseudoleucemia may exist. The case which he reports was that of a woman of fifty-seven years of age, whose disease began two and one-half years previously with a dryness of the mouth accompanied by swelling, at first of the right and later of the left parotid. The enlargement was painless. The tumor was of very dense consistence. A small portion excised for examination showed that the enlargement was due to a pronounced proliferation of the adenoid tissue which in places closely resembled follicles. In

no part of the specimen was there any evidence of an extension of the lymphoid tissue outside of the capsule of the gland. Bacterial examination was negative. Potassium iodide and Fowler's solution were tried for six weeks without effect, after which exposure to the X-ray was employed with a very marked improvement. After a few months there was a slight recurrent enlargement, but this rapidly disappeared under the use of the X-ray. Later on there was a slight enlargement of the submaxillary glands, which also disappeared under the action of the X-ray. The condition of the woman at the time the report was made was quite normal. The blood examination in this case was normal.

The histological examination is of a great deal of importance in the diagnosis of this condition, for Hofmeister has reported a case in which symmetrical tumors of the parotid and submaxillary regions were due to subfascial lipomata. The writer has also observed a similar case.

Tuberculosis and syphilis must also be considered in differential diagnosis, as well as the true symmetrical hypertrophy of the parotid, although all of these conditions are extremely rare.

The writer believes that internal medication is of comparatively little benefit and, while removal may often be desirable, nevertheless the excellent results following the use of the X-ray would seem to indicate that as the desired method of treatment.

It is extremely interesting to note that there are in the literature several cases of this sort in which the enlargement of the glands became gradually lessened, or even entirely disappeared, as the result of some acute general infection, especially erysipelas. The same has been noted in other diseases of the lymphatic apparatus, particularly leucemia.

A favorable result in the use of the X-ray in this condition has only been reported in one previous case, which was from Mikulicz's clinic.

Final Results in the Conservative Treatment of Tuberculosis of the Hip.
(*Endresultate der konservativen Coxitisbehandlung.*)

RUDOLF RITTER V. ABERLE. *Zeitschrift für orthopädische Chirurgie einschliesslich der Heilgymnastik und Massage*, Band 16, Heft 1 and 2.

From the large amount of material at his disposal in the clinic of Professor Lorenz, in Vienna, the writer has followed the subsequent career of a large number of cases of tuberculosis of the hip with a view to determining the results of conservative treatment, as well as the indications for operative intervention. There were only two published statistics of a greater number of cases than that of the writer's, and those are the statistics of Wagner, from Brun's clinic, and the statistics of Waldvogel from the clinic of Koenig.

From 1897 to 1901 there were 469 cases of tuberculosis of the hip treated in the clinic of Lorenz, but of this number the writer has studied only 157, in which are included only cases that could be followed and upon the ultimate outcome of which some definite opinion could be had. These were practically all dispensary patients who lived under bad

hygienic conditions. All of the cases were treated in a conservative fashion; in no instance was a resection of the hip done.

Of the 157 cases sixty-three and seven-tenths per cent were cured; twenty and four-tenths per cent died; fifteen and three-tenths were not cured; and in six-tenths per cent it could not be definitely determined whether they were cured or not.

In the determination of the course of the disease, whether it ended in healing or death, two factors were of great importance: First, the age of the patient at the beginning of the disease; secondly, the presence or absence of suppuration. Almost half of the writer's cases developed in the fifth, sixth and seventh years of life. This goes to demonstrate the very much greater likelihood of the occurrence of this disease in the first decade. Eighty-seven and eighty-nine one-hundredths per cent of the writer's cases occurred in the first decade, while only nine and fifty-four one-hundredths per cent occurred in the second. Those cases which began at an early age in general ran a more favorable course, with a more satisfactory termination than those which began later. The fact is generally admitted by all writers that the earlier the occurrence of the disease the better the prognosis. After fifteen years of age the cases that are not cured and the cases that end fatally exceed considerably those which are cured.

In accordance with the views of most writers, suppuration occurs in the majority of cases of tuberculosis of the hip. In the writer's 157 cases it occurred eighty-three times. The frequency of its occurrence seems to have a good deal to do with the conditions surrounding the patient, for in a private clinic of Professor Lorenz, suppuration occurs very much less frequently. Of the cases which suppurred only fifty-three per cent were cured, while of those which did not suppurate, eighty and six-tenths per cent were cured. Furthermore, the period of treatment was considerably more extended in cases in which the suppuration occurred, being on the average three and one-half years without suppuration, and four and three-quarter years with it.

Of the complications which have led to a fatal termination, meningitis is the most frequent; and another striking factor was that meningitis appeared to develop more frequently in the cases in which suppuration did not occur. In only rare instances did the tuberculosis of the hip appear to give rise to a subsequent pulmonary tuberculosis. The general condition of those cases which recovered was strikingly good. Bad functional results were present only in those cases which had partially movable joints. These are the cases in which fatigue and subsequent pains are often present. In the cases in which ankylosis was more or less pronounced the end result was very much better, and in the writer's cases there were comparatively few in which ankylosis did not occur. The presence of more or less marked contractures after healing was accomplished was of no especial significance, because of the ease with which these could be corrected by osteotomy or other measures.

The writer found that in his cases the shortening due to an interference with the growth of the leg was on the average one and thirty-nine hundredths centimeters. The real shortening, however, which in-

cluded this as well as that due to the disease, averaged in his cases three and eighty-seven hundredths centimeters. The trochanter on the diseased side was on the average two and twenty-six hundredths centimeters higher than on the well side. These statistics in regard to the shortening are considerably better than those reported by Wagner, and the writer believes that this is largely due to their method of treatment, according to which the leg is not kept out of function continuously and every possible attempt is made to prevent a marked atrophy either of the bones or of the muscles.

Two striking features developed by this study were: First, the great number of rigid, if not bony ankyloses; and, secondly, the comparatively small amount of atrophy of the diseased bone; both of which factors the writer believes are the result of their method of treatment.

PEDIATRICS

Edited by Henry L. K. Shaw, M. D.

Hematuria in Infants and Young Children.

PARKINSON. *The British Journal of Children's Diseases*, February, 1907.

Hematuria differs from hemoglobinuria by the presence of red corpuscles in the urine as well as blood pigment. The microscope is the best method for their detection. The more severe hemorrhages usually come from the kidney and are often associated with blood casts from renal tubules. In infants under one year of age the hematuria is generally due to one of three causes: infantile scurvy, renal sarcoma, or uric acid crystals. Cases are given in illustration, and in the case of infantile scurvy cited hematuria was the only obvious sign of the disease. In later childhood hematuria is one of the most frequent visceral bleedings of purpura hemorrhagica. In hemophilia bleeding from the kidneys may follow a slight trauma. It is also a common symptom of acute nephritis either primary or secondary to some infectious disease. Chlorate of potash, turpentine and cantharides are mentioned among the drugs that may produce hematuria. It has also followed the eating of rhubarb or strawberries. Renal calculi and infarcts in the kidney may cause hematuria. Surgical causes of hematuria are stones and vascular growths in the urinary passages. An obscure variety of hematuria has been described under the name idiopathic congenital, hereditary, or family hematuria, where it attacks several members of the same family and has the tendency to recur. The treatment depends on the cause. In general cupping, milk diet, and rest in bed are insisted upon.

On White-Wine Whey in Infant Feeding.

MYERS and STILL. *London Lancet*, January 12, 1907.

Sherry whey, or "white-wine" whey, combines certain properties which are of great value under certain conditions. Like the ordinary whey

prepared with rennet, the whey made with sherry is easily digested. The curd from sherry is flocculent and unlike the tough solid curd produced by rennet. The fat therefore is less completely entangled and the whey contains more cream than where rennet is used. The distinctive flavor is due to the presence of essential oils or volatile ethers in the wine and produces the carminative effect which is one of the virtues of this food. The marked acid reaction of sherry whey is due to tartaric and acetic acid and is of decided advantage in some digestive disorders, as is the case with buttermilk and acidified milk. Cooking sherry is more acid than drinking sherry and curdles the milk quicker. The method of preparation recommended is as follows: Ten ounces of milk are heated up to the boiling point and then two and a half ounces of cooking sherry are added and the mixture allowed "to boil up," when it is removed from the fire and allowed to stand for three minutes. The curd is then strained off through muslin. Cooking sherry contains about fourteen per cent. alcohol, so the whey prepared as above would contain about two and one-fifth per cent. alcohol. The indications for the use of this food are when only small quantities of food can be tolerated and where a stimulant is necessary. In cases where milk has been withheld it forms a useful step towards the return to milk feeding. In severe vomiting a drachm or two of this food will be retained when everything else fails. The authors have used it with success in feeding premature or feeble newly-born infants. This food is not intended for prolonged use, but it has been used as the only food for a week or ten days, and when given at alternate feeding it can be continued for two or three weeks. The quantity at a feeding is determined less by the age of the infant than by the general condition and degree of tolerance shown by the stomach. At no period of infancy is it desirable to give more than two and a half ounces at one feeding. A general rule laid down by the authors is that sherry whey, like other fluids containing alcohol, should never be given to infants in larger quantity or continued for a longer period than the exigencies of the case require.

Mongolian Bluish Spots over the Lower Spine in European Children.
(*Beitrag zur Erforschung der mongolischen blauen Kreuzflecke bei europäischen Kindern.*)

MENABUONI. *Monatsschrift für Kinderheilkunde*, January, 1907.

Several writers have called attention to the presence of bluish spots of discoloration seen in the region of the lower spine in new-born Japanese babies. These have been termed "Mongolian birth spots," and have been found to be present in other races of Eastern Asia. In 1905 a Japanese physician, studying in the Munich Children's Hospital, made a special examination for these spots and found typical examples in European children, and so concluded that they are not characteristic of the Mongolian race. Epstein of Prague wrote an exhaustive article on the subject the next year and found twenty-five typical Mongolian spots out of

60,000 children examined. He claims, however, that they are a racial characteristic and only appear exceptionally in the Caucasian race and then only where there is present the condition termed "Mongolismus." These spots have a characteristic appearance and cannot be mistaken for any other condition, although some authors describe it as a variety of nevus pigmentosus. They are decidedly bluish in color and of various sizes and shapes. They are chiefly found over the buttocks and sacral region. In Mongolian children they are occasionally seen on the extremities and face. They do not disappear on pressure and are not raised above the skin. The borders are irregular and the surrounding skin perfectly normal and sharply distinct from the spots. The discoloration is in the pigment cells of the corion and the upper layers are normal. These spots entirely disappear as the child grows older and only remain in exceptional cases. The differential diagnosis is not difficult, for they cannot be mistaken for different kinds of nevi, angioma or bed sores. The writer asserts that they have never been described as occurring in any other race.

A case observed by the author in the Children's Hospital at Florence is described very minutely. The families of the parents were Italians and had lived in Florence for many generations. The baby had a congenital heart lesion and bilateral syndactyly. There were six typical "Mongolian spots" about the lower spine and buttocks. These could not have been due to a local cyanosis as a result of the valvular defect, and the author believes that there was nothing in common between the spots and the heart lesion. The author believes these spots are characteristic and typical of the Mongolian race. The rare occurrence among the Caucasians is due to some intermingling of the races centuries ago.

Statistical Study of the Geographical Distribution and Etiology of Rachitis.—(Statische Beiträge zur Frage nach der Verbreitung und Aetiologie der Rachitis.)

RUDOLPH PFISTER. *Virchow's Archiv für pathologische Anatomie und Physiologie und für klinische Medizin*, 1906, XVIII, 1.

While in Italy, the author made a special study of the vital statistics of the country, with the purpose of determining, if possible, the relation of certain so-called etiological factors to the death rate from rachitis. His summaries show that the disease occurs in all parts of Italy and that the death rate is relatively much higher in certain provinces than in others.

The death rate from rachitis is considered by the author a fair index of the extent to which the disease is prevalent in Italy. Having determined this point, he proceeds to a study of the various conditions affecting the life of the people in the different provinces, which might have a bearing on the disease discussed. For instance, it is stated in text-books that a changeable climate, damp and swampy locations, dwelling-houses poorly ventilated, dirty and sunless, overcrowding in the cities, disease of the

parents, such as tuberculosis, syphilis, alcoholism, rachitis, diseases of the child diminishing resistance, such as digestive disturbances, catarrh, infectious diseases, all these are either direct or predisposing causes of the disease in question.

Taking up the question of climate, the author finds that the mortality from rachitis apparently bears no relation to the various climatic conditions found in Italy. Numerous cases were reported from the warm dry southern regions and certain damp and swampy localities were almost free from the disease.

In studying the relation of density of the population to the death rate from rachitis, he found many of the larger cities, including Rome and Naples, were almost entirely free from the disease.

There appeared to be no relationship between the death rates from syphilis and malaria and that from rachitis. On the other hand, his figures do not exclude the possibility that both tuberculosis and rachitis may be due to the same underlying conditions and, like a predisposition to nervous and mental diseases, be manifestations of degenerative tendencies. The figures would also suggest that alcoholism is one of the causes responsible for these degenerative tendencies. The last table presented shows that the provinces in which there are the greatest number of conditions, ordinarily considered as predisposing to rachitis, do not necessarily have a high death rate from the disease and that no special combination of unfavorable conditions seems to be present in the localities where the death rate is high.

A. T. L.

Lobar Pneumonia as a Complication of Diphtheria.

J. D. ROLLESTON. *The British Journal of Children's Diseases*, December, 1906.

The occurrence of lobar pneumonia in the course of diphtheria has always been regarded as an exceptional event. Many authorities claim that the pneumonia which complicates diphtheria is always of a lobular form. The present paper is based on observations made of 1,000 consecutive cases of diphtheria under the author's care at the Grove Fever Hospital, London. Lobar pneumonia occurred in seven cases. All the patients were children from two to seven years of age. Three were cases of laryngeal diphtheria, three of a severe faucial type, and one a mild faucial case. With one exception, which took place in the ninth week, all the cases arose within the first ten days of the disease. In three cases the pneumonia developed before the throat was clean. In three cases the onset was abrupt, occurring after the subsidence of the initial pyrexia, in the remainder the initial pyrexia had not yet subsided, but was increased by the supervention of the lung condition. The right lower lobe alone was affected in five cases, both lower lobes in one case, and the right upper lobe alone in one. None of these seven cases proved fatal, whereas in the author's case of broncho-pneumonia there was a mortality of eighty per cent. The author does not believe lobar pneu-

monia entirely an accidental complication, on account of its predilection for children and its occurrence at an early stage of the disease. The characteristics of lobar pneumonia as a complication of diphtheria are summarized as follows: (1) lobar pneumonia, as a complication of diphtheria, is a rare event; (2) it is not, like broncho-pneumonia, the especial appanage of laryngeal cases; (3) it occurs only in children; (4) it resembles the primary lobar pneumonia of children in being atypical in the following respects: absence of expectoration and of a marked respiratory trouble, in an occasionally remittent or even intermittent pyrexia, in the frequent occurrence of lysis, in its relative benignity, and absence of any sequelæ except empyema.

MATERIA MEDICA AND THERAPEUTICS

Edited by Spencer L. Dawes, M. D.

Serum-Therapy.

W. D'ESTE EMERY. *The Practitioner*, October, November and December, 1906.

The object of this paper is to outline in brief the advances that have been made up to the present time in the therapeutic application of immune sera to disease in man, the reasons for the failures that must be recorded, and to indicate the hopes for the future. The subject is of especial interest at the present time whilst the brilliant application of the method of specific vaccination on scientific principles, introduced by Wright, is attracting so much attention.

The value of diphtheria antitoxin is now more firmly established than ever, and the effect of a ten-year trial has been to demonstrate it to be a specific remedy comparable with mercury and quinine. The average case-mortality of diphtheria in the hospitals of the Metropolitan Asylums Board has fallen from above thirty per cent. to less than ten per cent. since the introduction of antitoxin, and, as during this period about seventy thousand patients have been treated, this means the preserving of the lives of twelve thousand persons. The necessity for the early use of the serum, so well known and so fully appreciated, is further established by MacCombie's figures:

DAY OF TREATMENT.	MORTALITY.
First	0.0%
Second	4.5%
Third	11.9%
Fourth	17.5%
Fifth or later	18.9%

These figures are an analysis of fifty-three thousand consecutive attacks.

While no definite rule as regards dosage can be laid down, the following practice can be recommended: Inject six or eight thousand units at once,

following it by a second injection at the end of twelve or twenty-four hours, continuing the treatment until the membrane shows signs of separating.

The only new development in connection with the serum treatment of diphtheria is the introduction of a bacteriolytic serum, whereby the bacilli may be destroyed in the local lesion. This subject is of no practical importance at the present time, but with the renewed interest that is being taken in the subject of endotoxins it may bring about results in the future.

There is but little to add to the conclusions arrived at by Kanthack as to the practical value of tetanus antitoxin; it is of but little value in acute tetanus, but of great value in the chronic variety, relieving the distressing symptoms and distinctly improving the chances of recovery. No statistics of scientific value are forthcoming. Large doses are required and these should be repeated whenever the effect passes off. Much difference of opinion exists as to the best sites for administration. There are six possibilities: (1) subcutaneous, (2) intravenous, (3) intracerebral, (4) intraspinal, (5) application to the nerve leading to the wound, and (6) local application. In chronic cases the subcutaneous or intravenous may be tried. The intracerebral has more to recommend it on theoretical grounds and striking results have been obtained in a few cases of acute tetanus where the prognosis seemed hopeless.

We now pass on to the sera which have a different mode of action, i. e., those which are in the main or entirely bacteriolytic, acting directly and without the aid of leucocytes.

Antistreptococcic serum is the most important example. The use and preparation of this serum is entirely empirical, and we do not know with certainty the method with which it acts. The empirical nature of the serum is well shown by the different methods which are used in different laboratories for its preparation. Further, there is no agreement as to the spacing of the doses or the amounts to be given, and many, if not most, of the sera issued commercially are not standardized in any way.

In such circumstances, clinical experience forms the only guide, and here there is no decided consensus of opinion. The cases in which the serum fails may be grouped under three heads: (1) those in which the serum was inert; (2) those in which the disease was not actually due to a streptococcus at all; and (3) those in which the serum was not homologous to the streptococcus in the particular infection. (4) The dose may be incorrect, either too small or possibly too large. Most practitioners choose a polyvalent variety in the first instance, though it is very doubtful whether its use presents any definite advantages. If no fall of temperature follows the first dose the serum should be changed. In some cases there may be a rise in temperature, which, if it be but transient and is followed by a fall, is a sign for a continuance of the treatment.

There are two views of the cause of this rise. Wright suggests that the serum may contain free toxin and may really be a bacterial vaccine in disguise. The other explanation is that the serum is really acting in the way it was intended to do, and is dissolving the streptococci, either by its action as a bacteriolysin or indirectly by an opsonic action, or by

stimulating phagocytosis; and that the toxin is set free and causes the rise in temperature.

Use of antistreptococcic serum in *scarlet fever*.—While the pathology of this disease is not definitely established, it is certain that the secondary lesions are occasioned by the presence of streptococci in the blood and throat. Observers differ as to whether the organism found in the throat is a specific one or a common one, forming a common but not necessary secondary infection. In the former case we would be obliged to prepare a special serum; in the latter we could reasonably expect any polyvalent serum to be equally effective. Moser's serum has been prepared on the former supposition, by means of streptococci isolated from scarlet fever cases, and the sera of Marmorek, Aronsen, Bujwid, and the ones employed in the English laboratories have been used on the latter. The results in all cases have been doubtful, although, on the whole, Moser's serum seems to have been the most successful.

Antistreptococcic serum has been used in articular rheumatism, having been prepared by Menzer from streptococci of human origin. It appears to cause an inflammatory reaction around the affected joint, hence the probably correct assumption of Blumenthal that it contains a free toxin and acts like tuberculin. It has been but little used, the chief evidence in its favor being a few very striking results published by Menzer himself.

Several sera of apparently decided value for the treatment of anthrax have appeared. Sclavo's, the best known, is obtained from the sheep or the ass, the animal being first immunised by Pasteur's method of the two vaccines, this being followed by repeated large injections of virulent cultures mixed with gelatine, this appearing to obviate the formation of abscesses. The serum has been very successful with animals, in which it has found its main use, but it has also given good results with human beings. The way in which it acts is not fully known.

In typhoid fever it is very easy to prepare a bactericidal serum of high potency from horses or other animals, but such sera are useless in practice; and this applies equally well to the *B. coli* and to cholera. Chantemesse's antityphoid serum is obtained by growing the bacillus in broth containing spleen substance, immunising horses with this and producing thus (he claims) a true antitoxin. This serum cannot be obtained commercially.

The serum treatment of plague is a little more hopeful. The best serum (in the most recent report from India) was Terni's, in which there was a small reduction in case-mortality, a relief of symptoms, and a lengthening of life in the fatal cases. Duprat claims better results from the Roux-Yersin serum, while Bannerman claims that it does not affect the case-mortality in the slightest degree.

Two antipneumococcic sera may be obtained commercially, Pane's and Romer's, the latter remarkably polyvalent. Several observers have reported remarkably favorable results using Pane's and several using Romer's, the dose of the former being much the larger.

Dysentery.—Several observers have found organisms in cases of dysentery. The best-studied sera are Shiga's, which is extremely potent in laboratory tests, and which its inventor claims to have lowered the

mortality of dysentery one-half; and Kruse's, which appears to be of much less value in practice. The latter has been used in the summer diarrhea of infants in America, apparently with benefit. Antidysenteric serum appears to offer more hopes of usefulness than other bactericidal sera, though other observers have not obtained results equal with those of Shiga.

Space does not admit of reference to the sera directed against tubercle, cerebrospinal fever, gonorrhea, cancer, malaria, hydrophobia, staphylococci, serpent-venom, syphilis, yellow fever, etc., and the serum treatment of such diseases as exophthalmic goiter is beyond the scope of these articles.

We have now to consider the reason why these antibacterial, or bacteriolytic, sera have proved so disappointing. Two substances are necessary: a stable substance, the amboceptor, or immune body, and an unstable substance, present in normal blood, the alexin or complement. The former is analogous to antitoxin. It is generally believed that after the union of the amboceptor with the bacterium there is a union of the complement in suitable amount with the combined amboceptor, the resulting ferment action destroying the bacterium. Now the antibacterial sera, as placed on the market, are devoid of complement, which is an unstable substance, and which disappears in a few days at the ordinary temperature, and is, moreover, very susceptible to the addition of minute amounts of the preservative used.

When such sera are injected into a patient, the preliminary stage is probably effected, but the proper amount of a suitable complement being absent, we have evident the first source of failure. The commercial sera are made from the lower animals and are readily activated by complements from these animals but not necessarily by those of human sera. This is the reason, according to Erlich, for the failure of antityphoid and anticholera sera.

In some cases it cannot be the unsuitability of the complement. For example, Shiga's serum is readily activated by the human complement, yet its efficiency is mainly in the test tube. It may happen that, although the human complement is suitable, it is deficient in amount. There is reason to believe that complement is derived in part from leucocytes, and that one of the means adopted by nature to combat disease is to increase leucocytes and thereby complement. Attempts have been made to increase the leucocytes and thus indirectly complement, but with little success.

Another and more important cause of failure is what is described by Neisser and Wechsburg as the "deviation of the complements." When a certain amount of bacterial complement is mixed with a certain amount of culture, and with varying amounts of antibacterial serum, it is found that a certain dose of the latter will bring about complete destruction of the bacteria, but that larger or smaller doses have less effect, or none. It is of no use for us to discuss the theoretical explanations for this, but it is important to remember that the dose of serum must be adapted to the amount of complement available. In disease of natural occurrence it is highly probable that this deviation of the complements does not occur. For example, take the recovery from typhoid fever. At first there is so little amboceptor for the bacillus in the blood, and the amount

present unites so quickly with the bacilli that it may disappear entirely from the serum. Soon, however, a specific antibody is formed and in increasing amounts, but which at first unites with the bacilli in the tissues. There is now a race for the mastery. At first the bacilli proliferate with a speed out of all proportion to the output of amboceptor, and the disease progresses to its height. After some time the production of antibody occurs with great rapidity, and (in cases that recover) gradually outstrips the bacteria, and at a certain time the amount present will be proportionate to the bacteria and to the complement, just as they are in the test-tube experiments. The bacilli which are exposed to this action will then be destroyed, and the process of recovery commences.

Thus the use of a large dose of potent serum may be not only useless but actually injurious, leading to an interference with the normal curative processes, and in no way helping them. We may, therefore, feel fairly certain that the indiscriminate large doses of a serum which acts solely as a bacteriolytic agent is useless and not devoid of danger. The attempt to supply the deficiency in complement by the addition of freshly prepared immune serum, or by complementing it by the addition of fresh serum from some suitable animal seems to be useless in practice, the alien complements probably uniting with the tissues and becoming inert.

The hope for the future lies in the successful production of powerful opsonic sera and of antiendotoxins. With regard to opsonic sera, we know that the presence of opsonins is necessary for phagocytosis, that the immunity in a given infection is in some measure dependent of the amount of these substances in the blood, and that the latter can be raised by means of a suitable method of vaccination to an abnormally high level. The degree to which this can be done varies in the case of different micro-organisms. In tubercle and staphylococci it is rare that we can raise the index to more than twice the normal figure. In other infections higher figures may be obtained, from 3.5 up to 9.0 in pneumonia being possible.

It is now known that the height of the opsonic index is not in proportion to the amount of opsonin present in the serum; a doubling of the index means that the quantity of opsonin present has been increased in a far greater ratio, possibly five or six times. Hence an index of 9.0 indicates a very great excess of opsonin, how great it is impossible to say; but it is probably so large that, if ten or twenty cubic centimeters of such serum were injected into the blood stream, it would bring about a perceptible increase in the opsonic index. The method would appear to be specially worthy of trial in pneumococcic infections and in plague where the presence of bactericidal substances in the blood is doubtful, whilst that of opsonins is now well established.

The difference between a specially-prepared opsonic serum and the sera used at the present time would be two-fold. In the first place, the treatment of the animals from which the serum is to be prepared is at present quite haphazard, while in the preparation of sera rich in opsonins, the dose must be not too large, must be nicely graduated, and the animal must be bled only when the examination of the blood shows the greatest amount of opsonin obtainable. In the second place, such sera must be

used fresh, a statement borne out by the researches of most English observers.

These facts may have some bearing on the divergent results reported from the use of these sera, notably the antipneumococcic. Thus, numerous Italian observers have claimed excellent results from Pane's serum, whilst Romers has been very beneficial in Germany, whereas comparatively few successful cases of the use of either have been reported from England.

The other direction in which promising work is being carried out is in the direction of the formation of an antiendotoxin. The toxins of the pathogenic bacteria, other than those of tetanus and diphtheria, and two or three others of less importance, are entirely unknown. There is every reason to believe that they exist and that the symptoms of the diseases in question are produced by them, and there is a high probability that, if they could be procured, the production of the antitoxin would be possible.

The new development consists in an attempt at the preparation of a true endotoxin, by freezing the bacilli at the temperature of liquid air, grinding them into an impalpable powder, and centrifugalizing the fluid obtained on thawing until all solid particles are removed.

The solution obtained is sterile, and it appears to contain a true toxin, although not in very large amount as compared with the quantity obtainable from diphtheria or tetanus bacilli. Many experiments have been made with this kind of preparation, the important features being that they led to the production of a potent antiendotoxin. This was prepared from the goat, and was so powerful that one-fiftieth of a cubic centimeter would neutralize thirty lethal doses of the toxin, normal goat serum being devoid of any appreciable power in this respect. The published results deal with the bacilli of typhoid, cholera and dysentery.

"The Serum Disease."—The rashes and other phenomena which may follow injections of serum are usually preceded by an incubation period of eight to twelve days, or when following a second dose, even though this may be small it may appear immediately. The most prominent symptoms are fever of a remittant type and rashes, either urticarial or erythematous. The lymph glands corresponding to the area injected are frequently enlarged, this coming on before the other signs develop, and their return to normal is the first sign of recovery. There may be pains in the joints, slight general edema, and slight albuminuria. The leucocyte count is slightly raised during incubation and falls suddenly when the symptoms occur. This is due mainly to a diminution in the polynuclears.

The severity of the disease is, as a general rule, proportionate to the amount of serum used, an additional reason for the use of antitoxin of a high potency. The pathology has not been made clear.

A decided advance in the preventive treatment of the serum disease has been made by Netter, through the introduction of calcium chloride in doses of one gram at the time of each injection and for two days subsequently.

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PHYSICIANS AS MEN OF LETTERS.

Read before the Medical Association of Troy and Vicinity, April 3, 1907.

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Bennington, Vt.

The various excursions that Dr. Osler has made into the spacious field of polite literature, very naturally direct our attention to those members of our profession who have exceeded the narrow bounds of professional attainment, and have established themselves in the heart of humanity by their contributions to humane learning. Thomas Sydenham we may scarcely reckon among men of letters, or John Bell, or Sir Charles Bell, or Boerhaave, or Cullen, or John Hunter, or Cheselden, or Benjamin Rush, for they never stepped out of the narrow paddock of medicine into the open liberty of humane letters, although the work that they accomplished in medical literature must easily show their fitness for a broader field if they had ventured into it. Rush, indeed, did cover a wider area and discuss larger topics, but in him, too, the man of letters was strictly subservient to the medical practitioner, and utility and instruction were rather his aim than sweetness and light. So few are they who have entered literature through the gateway of medicine, that it seems almost as if Apollo had disinherited his son Æsculapius. Of these few, the greater part are not especially known by their achievements in the field of medicine, for their actual connection with our profession was casual and obscure.

John Keats, for instance, was apprenticed to a surgeon at Edmonton, in 1810, at the age of fifteen; completed his apprenticeship at the age of twenty, and went up to London in the hope of receiving hospital instruction, "walking the hospitals," as it was termed. Surgery was then considered the very inferior

handmaid of medicine, and surgeons received apprentices as silversmiths and brewsters did. In London, at the age of twenty, he made the acquaintance of Leigh Hunt, Hazlitt and Shelley, and discarded the lancet for the pen. Five years later he died, and his "Lamia," "Hyperion," "Ode to a Grecian Urn," and "Eve of St. Agnes," attest the wisdom of his changed purpose, and set his name in the very front rank of British poets. Plutarch tells us that Archidamus jeered at Periander for abandoning the glory of being an excellent physician, to gain the repute of being a very bad poet. Mr. Keats, on the contrary, exchanged the practice of a mere mechanic art, in which eminence was intrinsically denied him, for an honorable seat among the greater divinities of human genius, and it is probable that this change in his life was due directly to the advice of Leigh Hunt, who thus rendered a service of incomparable merit to humanity.

Smollett, also, served his apprenticeship to a surgeon, and, in default of any other means of subsistence, took the berth of surgeon's mate on a British ship-of-war. His service lasted for several years, and he was present at the siege of Cartagena in 1741. During this time, as Sir Walter Scott says, he acquired "such intimate knowledge of the nautical world as enabled him to describe sailors with such truth and vivacity that, whoever has since undertaken the same task, has seemed to copy Smollett rather than nature." Fenimore Cooper, Marryat, Clark Russell, and Jacobs, followed, as well as they could, in Smollett's footsteps, but no later work has equaled in literary excellence the "Roderick Random" and the "Perigrine Pickle" of the surgeon's mate.

Goldsmith, that dissolute and improvident genius, pursued nearly all known vocations as well as that of medicine. He entered Trinity College, Dublin, at the age of seventeen and, as a sizar, paid for his tuition and board by performing such menial duties as sweeping the halls and waiting on table. These duties while menial, were by no means degrading, and many excellent and some eminent men have been indebted to such work for their education, but Goldsmith was never able to learn anything, I will not say minutely, but even with an approach to exactness. In spite of the degree of M. D. which he pretended he had received at the University of Padua, he maintained obstinately and even angrily that he chewed his food by moving his upper jaw. It would have been infinitely humiliating to any one with

less exuberant and irrepressible vanity than Goldsmith, to realize his successive failures, which could not, even in the partial judgment of his admirers, be reasonably ascribed to any other cause than to his buoyant and inordinate incompetence. He was reprimanded and plucked, disgraced and degraded in college, and although he received his degree of Bachelor in Arts, yet a more pitiable and less promising youth surely never obtained a degree from any reputable university.

He could play on the flute, and he was proficient in singing Irish songs. After failing disgracefully in the study of law, theology and medicine, as destitute as a beggar, he wandered over Europe, playing on the flute for supper and bed, and living on the alms which he received at convent gates during his ramblings. Aimless and irresponsible, an inveterate gambler, lazy and sensual—for he never lost his fondness for hired embraces, and the attractions of sexual pleasure always appealed to him overpoweringly—he was meanwhile collecting the material for the "Traveler," "The Deserted Village" and the "Vicar of Wakefield." Then came fortune and knocked at his door. Then came friends; and such friends! One would envy the position of a tapster or a drawer at the "Mermaid" in Cornhill, where Shakspeare, Jonson, Fletcher, Selden and Beaumont drank their wine and discussed Montaigne and Rabelais; the best of us would have been proud of a servant's place in Button's Coffee House or Will's in Russell street, where one could have listened to the conversation of Swift, Steele, Gay, Addison and Arbuthnot when they read the third book of Mr. Pope's "Dunciad," or Mr. Swift's "Tale of a Tub;" but the friends of Dr. Goldsmith were no less distinguished. Edmund Burke, Edward Gibbon, David Garrick, Dr. Johnson, and Sir Joshua Reynolds formed surely as illustrious a company of men of letters as ever met together in esteem and affection on this earth. Burke burst into tears when Goldsmith died; Sir Joshua Reynolds dropped his pencil and spent the day in mourning. They all loved him. He compiled a "History of Rome" which paid him \$1,500, a "History of England" which brought him in \$3,000, and a "Natural History," for which he received \$4,000. His histories were filled with distortions and inaccuracies, and his "Animated Nature" with myths and canards; but the easy, noble flow of his graceful English style covered all imperfections in weightier matters, and his histories only augmented his fame. Dr. Johnson

ridiculed his pretensions to writing natural history by saying that "Goldsmith's knowledge of zoology was just sufficient to enable him to distinguish between a horse and a cow." But the wealth of Tarapacá would have been too little to pay his gambling debts and his improvident gifts to his temporary mistresses, and destitution and disgrace dogged his steps.

It seems that always, when in the lowest extreme of penury and degradation, he recurred to the practice of medicine as a last resource. When he had returned to England from the strolling beggary of his continental life, he had applied to the all-powerful East India Company for a subordinate medical berth, and had obtained it on the strength of his own pretensions and perhaps through the favor of some unwary patron, but he was almost immediately dismissed, and his dismissal was doubtless due to his incompetence to discharge his duties, for soon afterward, having presented himself for examination for the humble position of surgeon's mate in the navy, he was found unfitted even for a post so meager and was promptly rejected.

So, now, when his excesses and his gambling and his indiscreet generosities had again impoverished him, he started out to practice medicine, and announced his readiness to visit, receive and prescribe for patients. But none came. Even his friends and admirers would not submit themselves to his professional care. They must have known his scanty attainments. Topham Beauclerk recommended him pleasantly to "prescribe only for his enemies." In accordance with this advice, Macaulay says, he prescribed for himself, and soon passed beyond the reach of real physicians. He was forty-five years old when he died. Gifted with a wonderful literary genius, he was an unworthy parasite upon the profession of medicine.

Warton tells us, in his "History of English Poetry," that Sir John Mandeville, the great Eastern traveler, who has been called the "father of English prose," was a physician, as was also Dr. Andrew Borde (1530), whose skill in facetious discourses at country fairs gave him the title "Merry Andrew," which has descended, with some increment of scurrilous implication, to our own time.

Sir Samuel Garth was a prosperous and skilful London physician, who supported, eagerly and ably, the proposal to establish public dispensaries for the protection of the sick poor from the greed of the apothecaries. Indeed, he wrote a poem on the sub-

ject, called "The Dispensary," which ran through three editions in a year and secured him fame and position. He was twenty-nine years old when it appeared, and although he gave cause for hope that he might eventually rival Blackmore in dulness, yet he did very little other literary work. He, however, wrote the Epilogue for Addison's "Cato" when it was brought out at the Drury Lane Theatre, and some years after he had the distinction of delivering the Harveian oration. It was not because "The Dispensary" was good that it had such a large initial sale; it was because it chanced to handle a popular theme at an opportune time. It has long since fallen into the dim limbo of oblivion, but no other fate was possible for the kind of poetry that it contains; some of the best of whose lines are the following: He marvels

"How the same nerves are fashioned to sustain
The greatest pleasure and the greatest pain;
How the dim speck of entity began
To extend its recent form and stretch to man;
How matter, by the varied shape of pores,
Or idiots frames, or solemn senators."

And yet Pope neglected to pillory Garth in the "Dunciad!"

Sir Richard Blackmore had a worse fate, for Pope did not scruple to include this eminent physician among the disciples of "Dulness." Blackmore merits the distinction of introducing perhaps the most debasing simile that can be found in the whole range of serious poetry, when he likens thunder to intestinal gas finding or forcing a vent through the anus. I may not commit the impropriety of naming the good old English word which describes this purely physiological phenomenon. Blackmore speaks of the thunder—

"Pent in the bowels of a frowning cloud
That cracks—as if the axis of the world
Was broke—" etc.

Sir Samuel Smiles, the author of "Self Help," "Thrift," and "The Life of George Stephenson," took his M. D. degree in Edinburgh in 1832, the year Sir Walter Scott died.

Marat, the associate of Danton and Robespierre, the "Ami du Peuple," the universally execrated Marat, who was reviled by Carlyle and by all historians of the French revolution—the bête feroce—who was feared and hated as the embodiment of the

fiercest and most bloodthirsty faction of the Jacobins, was a physician. Born in Neuchâtel, educated in Bordeaux, we first find him practicing his profession in a fashionable district in London. He was made an M. D. of St. Andrew's University, Edinburgh. He opposed the philosophy of Helvetius, who derived all virtues from self-interest, and Voltaire himself did not despise him as an antagonist. Politics, philosophy, social science, education and medicine were equally the themes upon which he exercised his prolific pen. His fame as a physician was great, his learning was really great. The Comte d'Artois, afterwards Charles X, made him physician to his guards at a good salary. The language of his commission is interesting. It states that d'Artois desired his services, "because of his good and moral life and of his knowledge and experience in the art of medicine." He returned, then, to Paris, where his influence in the scientific world was second only, perhaps, to that of Benjamin Franklin, who often visited him and discussed questions of light, heat and electricity with him. Goethe admired him. There never lived a man more devoid of the sentiment of fear than Marat, nor one more devoted to the prosecution and propagation of his principles, nor, indeed, one more implacable and relentless. This turned him into the ruthless monster of whom the world was well rid by the dagger of Charlotte Corday. At his death the whole world drew a deep breath of relief. He had become the incubus of France.

Mark Akenside, who wrote the "Pleasures of the Imagination," and whom the great Dr. Robertson admired and courted, took his degree of M. D. in Leyden, which, on account of the work and prestige of the great Boerhaave, was at that time perhaps the most famous university in Europe. He practiced medicine first in Northampton and later in London. Then, in 1753, the University of Cambridge bestowed on him the degree of M. D. The next year he was elected a fellow of the College of Physicians; in 1755 he delivered the Gulstonian lectures, in 1756 the Croonian lectures; in 1759 he was chosen chief physician to St. Thomas' Hospital; in 1760 he delivered the Harveian oration. Before this period of professional glory, he had written "The Pleasures of Hope" and the "Odes," and now he increased his reputation by a series of essays and reviews which were published in Dodsley's "Museum" and established the repute of that publication.

Abraham Cowley wrote an epic romance on "Pyramus and Thisbe" at the age of nine, and at fourteen he published a volume of poems which made him at once famous. Pope says of himself that

"He lisped in numbers and the verses came,"

but Cowley is the most conspicuous instance of poetical precocity that the world has seen. Even Milton and Chatterton must yield to him on this point. He was a contemporary of Milton and of Sir Thomas Browne, a little younger than Browne and a little older than Milton. He was noted for his varied scholarship. Milton did not disdain to borrow from Cowley any more than from Robert Burton, likewise a contemporary. Cowley's fame exceeded Milton's as Chapman's exceeded Shakspeare's, and as Glück's surpassed that of Bach, in the opinion of their contemporaries. In all three cases posterity has reversed this judgment. When Dr. Johnson was invited by the "forty first booksellers" of London, to write biographical notices of the British poets, it was decided that British poetry began with Cowley, and so his is the first of Johnson's "Lives."

Lessing, the author of "Laocoön" and the "Dramaturgy," one of the most glorious names in European literature was destined to the career of a physician, though he never practiced medicine. Schiller was a regimental surgeon.

In our own days we have contributed to literature the names of Oliver Wendell Holmes, John Brown, William H. Drummond, Weir Mitchell, Virchow, J. G. Holland, Clemenceau and Conan Doyle—names of varying excellence, and none of them, save that of Holmes, of especial magnitude, but they are not only the best, they seem to be all that we can offer.

There remain four names which we must consider too briefly—four of the eminent names in literature—Rabelais, Sir Thomas Browne, John Arbuthnot and Holmes. To each of these a whole volume would be inadequate. All were eminent as physicians, all achieved enduring fame as men of letters.

Rabelais is conceded to be perhaps the most learned man of whom we have a record. Like Gibbon, he was the author of one book. The first complete edition of this was published in 1567, and the next generation saw sixty editions printed—a new edition every six months for thirty years. Many eminent scholars have devoted themselves entirely to explaining and annotating

Rabelais. He has been the admiration and the despair of mankind. He is read in all tongues. After his death none were admitted to the degree of Doctor of Physic at Montpellier who had not first put on the gown and cap of Dr. Rabelais, which are still preserved in that city. To-day when the French wish to describe a perfectly well-educated man, a man of universal attainments, they do not say "he has such and such degrees," or "he belongs to the Academy," but "he knows his Rabelais," as if to know his Rabelais were a higher encomium than could otherwise be expressed in a single phrase.

Rabelais was a Franciscan monk. He resided with the Franciscans for twenty-five years. He became displeased with the monotonous austerities of the order, and was released from his vows by Clement VII, on application of his friend Geoffroy d'Estissac, Bishop of Maillezais, and entered the order of Benedictines. Discontent again overcame him, and a growing disgust with the doctrines of the Church, and at the age of forty he entered the University of Montpellier. He was entered as a student in medicine on the sixteenth of September and took his degree on the first of November of the same year. The next year we find him lecturing publicly on medicine at the University. There can be but one explanation of the facility with which he satisfied his teachers of his proficiency in medicine. The University of Montpellier was a rigorous and famous school, and this middle-aged monk could claim no partiality and expect no personal complaisance, but Rabelais' knowledge was so wide and, at the same time, so exact, that in the course of his general reading he had unconsciously prepared himself for a critical examination even in technical subjects, and his proficiency was so complete that the faculty of the University were compelled to acknowledge his attainments and award him his degree.

This is no place to consider Rabelais as an author or to examine the significance of his work. From this time he practiced medicine and wrote his *Pantagruel* simultaneously. As a physician he was honored during his life, and at his death he left a work which for over 300 years has been the admiration and the delight of mankind. It is no excessive praise to say that French literature is more indebted to Rabelais than English literature is to Shakspeare. Indeed, we can only imagine how greatly Shakspeare himself must have reveled in Panurge and Friar John, with whom he was certainly acquainted.

Francis Bacon, in his "Advancement of Learning," says that, in his day, "Imposture was frequently extolled and virtue decried. Nay, the weakness and credulity of men is such that they often prefer a mountebank or a cunning woman to a learned physician. * * * And therefore one cannot greatly blame physicians that they commonly study some other art or science more than their profession. Hence, we find among them poets, antiquaries, critics, politicians, divines, and in each more knowing than in medicine." And yet among Bacon's contemporaries we can discover no man, eminent in letters, to whom this remark can properly have been applied, for of the twenty-nine poets and dramatists who were born between 1553 and 1586, between Anthony Munday and John Ford, I do not know of one who was a member of our profession, Sir Thomas Browne himself being but twenty-one years old when Bacon died in 1626.

Perhaps no man ever gave the history of his own mind and unfolded the intricacies of his own thoughts more fully than did Sir Thomas Browne in his "Religio Medici." Montaigne makes disclosures whose naïveté causes a smile of pleasure that deepens almost into affection, but you are aware of the existence of thoughts, which you are not asked to share, and of apartments which you are not invited to enter. Rousseau poses, and, while commending his own virtues, confesses only the most harmless or the most universal of faults, which seem to lose all their odium when acknowledged by so virtuous and so superior a being. Sir Thomas discloses his own mind indeed, but he seems not to observe current events. During the whole period of the struggle of King Charles with the parliament, and his betrayal, trial and death; during the protectorate of Cromwell and the subsequent contest between Lambert and Monk; during the Restoration and the reign of the Merry Monarch, Charles II, he was quietly engaged in practicing his profession in Norwich in Norfolk. Of all those momentous events he seems to have noted nothing, he has left no written comment or reported criticism on any one of them. They overcame him like the summer's cloud without his special wonder. He seems to have been obnoxious neither to the Cavaliers nor to the Roundheads, to have accepted the usurpation of Cromwell and the Restoration of Charles with equal silence and indifference. The overthrow of a kingdom seems to have held no disquietude or even interest for him. Perhaps more than any other man then living in

England, Sir Thomas Browne, with his calm eye, his clear mind and his lucid style, might have explained for posterity the austere virtue and the unexampled diplomacy of Cromwell, one of the greatest and most misunderstood men of history, but the study of that complex character had no attractions for him. The "Hydriotaphia," indeed, was written at the very time (September 3, 1658) when Cromwell died, but the fears, perplexities and apprehensions that Cromwell's death excited are not his theme, but the discovery of some ancient pottery that was unearthed in Norfolk.

Browne's "Religio Medici" is a book that every educated man should read—a book that every medical man should know. To read extracts from it would be to emulate the pedant in Hierocles, who, having a house for sale, carried a brick in his pocket as a sample. His style is that of the prose writers of his age, the age of Jeremy Taylor, of Robert Burton, of Roger L'Estrange, of Milton and of Bacon, that noble period of English prose among whose masters Browne is one of the most eminent. Highly imaginative and poetical, draped in metaphor and laden with quotation, his style is yet clear, majestic and splendid. It has been declared that "the concluding chapter of his 'Hydriotaphia' can hardly be paralleled in the English language for richness of imagery and majestic pomp of diction." Thackeray tells us that Montaigne and Howell's "Letters" were his bedside books, books that he read o' nights when sleepless. The "Religio Medici" might well be the bedside book of us physicians, to be read with appreciation and delight.

John Arbuthnot took his degree of M. D. at Aberdeen. He then went to London and, while waiting for patients, supported himself by teaching mathematics. He translated from the Dutch the essay "On the Laws of Chance, or a Method of Calculation of the Hazards of Game." Next he wrote a critical essay on the "Deluge," another "On the Usefulness of Mathematical Learning," a monograph entitled "An Argument for Divine Providence," and in 1705 he compiled a comparative table of Greek, Roman and Jewish measures. Still, professional progress was slow. His reputation for learning was becoming established, his fame as a wit was growing, but patients avoided him and money was scarce. About this time he happened to be in Epsom while Prince George of Denmark was there. The Prince was taken suddenly ill and, for want of any other physician, Arbuth-

not was called in the emergency. His delicacy, his kindliness, his composure and his skill captured the royal heart and Arbuthnot's future was assured. He continued the Prince's physician as long as the royal patient lived. Soon after, at the Queen's urgent request, he was appointed her physician extraordinary, and never again had to complain of the indifference of patients or of the neglect of fortune. Those were happy times for literary men. Macaulay has narrated, in his essay on Dr. Johnson, the marked favors that were lavished on authors of the time of Queen Anne. "There was perhaps never a time," he says, "when the rewards of literary merit were so splendid—when men who could write well found such easy admittance into the most distinguished society and to the highest honors of the state." Of all the array of authors that illuminated the reign of Queen Anne, no one exceeded Dr. Arbuthnot in the depth of his learning, the brilliancy of his wit, or the warmth of his heart. Thackeray admired and honored Arbuthnot above all his contemporaries. In 1712 he wrote the famous satire, "The History of John Bull," which even now, when the wars of Marlborough seem to belong to the dim background of ancient history, will well repay the reading. The "History of John Bull," whence originated the cant phrase applied to-day to the people of Great Britain, is a political satire, very similar in structure and merit to Swift's "The Tale of a Tub," which was published in 1704. These two Rabelais alone has surpassed, for even Juvenal and Boileau fail to reach the same unadorned, unaffected directness of satyric genius.

Two years later he assisted in forming the "Scriblerus Club," which also comprised Pope, Gay, Swift, Atterbury and Congreve, and yet all the work that remains to us of this cluster of men is conceded to be that of Arbuthnot. The first book of the "Memoirs of Martinus Scriblerus" ranks as one of the finest pieces of sarcastic humor in the language. His "Virgilius Restauratus," published in the second edition of Pope's "Dunciad," is a remarkable fragment of emendations and corrections of Virgil, written in a playful vein, but with an insight and spirit that make it almost earnest and wholly stimulating. In 1723 he became one of the censors of the Royal College of Physicians, and in 1727 he had the supreme honor of delivering the Harveian oration. He died, lamented by his friends and full of honors, in 1735, being nearly seventy years of age.

I do not desire to protract this paper unduly, but I wish to make a single reflection upon the age of Queen Anne. It was essentially an age of superficial affectation. Its most eminent figure was Pope, whose ascription to himself of all the virtues blinded the eyes of generations of men who took him at his assumed value, but he was merely the chief among a throng of triflers, for it was an age of triflers. His "Essay on Man" illustrates his facile versification, his skill in epigrammatic antithesis and his meagre soul. His most finished poem, "The Rape of the Lock," is a trifle, built upon the most insignificant of trifles, the theft of a lock of Mrs. Arabella Fermor's hair. What a magnificent theme! Yet the Earl of Roscommon surpassed him. He wrote poems "On a Young Lady's Cold," "On a Dead Lap-dog,"—themes not only trivial but nauseating. The "Spectator" is a collection of elegant trifles. Contrast Addison's "Sir Roger de Coverly" papers with Milton's "Areopagitica," or Addison's "Campaign" and "Cato" with Milton's "L'Allegro" and "Il Penseroso." This change of tone and of ideals was due primarily to the influence of Charles II, the "Merry Libertine," who attracted men to license, and afterward to the gloomy bigotry of his brother James, who repelled them from virtue.

Charles II flaunted his mistresses shamelessly before an indulgent nation. A woman of easy virtue passing through the royal arms became ennobled and a whore was transformed into a duchess; Barbara Palmer became the Duchess of Cleveland and Louise de Querouaille the Duchess of Portsmouth. Charles had so little self-respect as to receive, when on the throne, a pension that Louis XIV had refused him when an exile. He was bribed by a mistress whom Louis sent him into refusing the righteous aid which Holland expected against the unjust invasion of the French king. Literature was degraded as public morals degenerated. Under the commonwealth "the Bible lay on the table of the House of Commons, and its prohibition of swearing, of drunkenness, of fornication, became part of the law of the land. Adultery was made felony without the benefit of clergy." History presents no greater contrast than exists between the morals of the Restoration and those of the Commonwealth. Debauchery, cynicism, sacrilege, the open display of immorality in all its forms, succeeded to the stern virtue of the Puritans. The Restoration was a reeling orgy of shamelessness and brutality. "Lord

Rochester was a fashionable poet, but even the titles of some of his poems " must be left unuttered. " Sir Charles Sedley was a fashionable wit, but he was hooted and stoned by the very porters of Covent Garden for the foulness of his language. The Duke of Buckingham consummated the seduction of Lady Shrewsbury by killing her husband, while the Countess, disguised as a boy, held his horse for him and assisted at the murder."

And this was the age that ushered in Pope, Addison, Congreve and Steele. In Pope there was no tenderness, no happiness, no serenity. He was an adroit versifier. He knew well the mechanic part of poetry, but there was in him no human sympathy, no aspiration, no depth, no sweetness. Even generous vices were denied him, and as for virtues, he had only the faculty of simulating them awkwardly. Malice and envy were the breath of his nostrils, and sarcasm his natural utterance. This is what made his "Dunciad" so good. He wrote libels on Chandos, Aaron Hill and Lady Mary Wortly Montague, and then, as Taine says, he lied when he was obliged to disavow them. Dr. Johnson says that he hardly drank tea without a stratagem. He was never frank, always acting a part, and pretending virtues which he had heard admired.

And what I say of Pope may, *mutatis mutandis*, be said of his contemporaries and admirers. There were only two genuine men among the men of letters who graced and deformed the classical age of English literature, Swift and Arbuthnot, and Swift was a misanthrope who passed into chronic dementia. The only sane, clear, virile mind; the only wholesome human heart among those who are best described as the wits of Queen Anne's reign was Dr. John Arbuthnot. Addison was a man of supreme taste, and earned the distinction accorded him by Macaulay and Thackeray, of making morality fashionable, which Dr. Johnson afterward made universal. Pope was a poet of faultless correctness, Swift of magnificent intellectual power, but Arbuthnot alone, in addition to these qualities, was also a man of virtue, dignity and nobility of sentiment—a well-poised and accomplished man of letters and man of the world—and yet even Arbuthnot was a product of this shallow, frivolous age.

There remains, then, Oliver Wendell Holmes, a name loved and venerated by two generations of physicians and admirers. Some of us may say of him, as Ovid says of Virgil and Scott of Burns, "Vidi tantum." A few of us know how genial and

how courteous was his conversation, how gentle his irony, how just his criticism, how fine his professional ideals, how nobly modest and unobtrusive his life. There have been names more eminent than his in letters, names more famous than his in medicine, but neither in medicine nor in letters has there lived a man who cultivated either with more purity of life, more nobility of purpose, more sympathy of heart. Dr. Johnson says that Garrick's death eclipsed the gayety of nations and impoverished the public stock of harmless pleasure, but Garrick's work was ephemeral and his life a breath; while Holmes' work was enduring and his life a continual inspiration to earnestness and cheerfulness. What delight he has given us! How charmingly he soothes the asperities of life! His sincerity is as invigorating as his humor is delicate. There is a fine aroma in all his work. It is the aroma of virtue. We know the "Autocrat" and the "Professor" and the "Poet" as we know our friends, and in knowing them we have enlarged the circle of our friendship. The blighting sarcasm of coarser natures becomes gentle irony in Holmes. How pleasantly he rebukes quackery and vice! His short lecture on "Phrenology," which is still too long for full quotation here, is an illustration.

"I shall begin, my friends, with the definition of a pseudo-science. A pseudo-science consists of a nomenclature with a self-adjusting arrangement, by which all positive evidence, or such as favors its doctrines, is admitted, and all negative evidence, or such as tells against it, is excluded. It is invariably connected with some lucrative, practical application. Its professors and practitioners are usually shrewd people; they are very serious with the public, but wink and laugh a good deal among themselves. The believing multitude consists of women of both sexes, feeble-minded inquirers, political optimists, people who always get cheated in buying horses, philanthropists who insist on hurrying up the millennium, and others of this class, with here and there a clergyman, less frequently a lawyer, very rarely a physician, and almost never a horse jockey or a member of the detective police. I did not say that phrenology was one of the pseudo-sciences.

"A pseudo-science does not necessarily consist wholly of lies. It may contain many truths, and even valuable ones. The rottenest bank starts with a little specie. It puts out a thousand promises to pay on the strength of a single dollar, but the dollar

is very commonly a good one. The practitioners of the pseudo-sciences know that common minds, after they have been baited with a real fact or two, will jump at the merest rag of a lie, or even at the bare hook. * * * I did not say that it was so with phrenology."

He condemns quackery, you see, but he condemns it with a smile, and we, with him, smile as we condemn it. We will find no purer fun in Thomas Hood than "My Aunt," "The One Hoss Shay," and "The Height of the Ridiculous," no simpler pathos than "The Last Leaf;" no finer fancy than "The Chambered Nautilus," while his prose recalls that of De Quincey—without its glitter, indeed, but with a warmer utterance.

To-day, when the tendency of professional practice is so strong toward the subdivision of activity into ever-narrowing specialties,—when we lose in scope what we gain in intensity, it is not amiss to raise our eyes at times and look about us at those who have held aloft, with equal grasp and steady hands, the two torches of medicine and literature.

THE THERAPEUTIC VALUE OF THE X-RAY.

Read before the Medical Society of the County of Albany, February 13, 1907.

By ARTHUR HOLDING, M. D.,

Skiagraphist at the Albany and St. Peter's Hospitals, Albany, N. Y.

"Experience is better than theory, and both combined are wisdom."

—*Johnston.*

The Röntgen ray, as a diagnostic agent, especially in surgical conditions, has been accepted and its position to-day stands assured. Its value has been seen and accepted by all. As a therapeutic agent, however, it does not enjoy the same assured position, mainly because its therapeutic results have not been widely seen or appreciated. The case reports have been multitudinous, but physicians in general seem to hold the X-rays (in common with electricity in every form) to be condemned as a remedial agent. It has been my privilege to enjoy to a considerable extent the confidence of the profession in skiagraphy, and now that I have some results to show from a therapeutic standpoint I hope that they will not be discredited as the self-advertisements of a charlatan nor the empty effervescence of an enthusiast.

The physiological actions of the rays have been thoroughly studied, and most observers agree in the main in their findings. On the skin there occurs a dermatitis with capillary dilatation, followed later by thickening of the entire skin, especially in the Malpighian layer; the hair follicles almost entirely disappear; the papillae are destroyed; the sudoriferous and sebaceous glands disappear; obliterating endarteritis of the vessels occurs and frequently masses of cells are seen occluding the lumen of the small vessels. Later an increase of the connective tissue occurs similar to that following inflammation from any other cause. The nerves, large blood-vessels, muscles, ligaments, cartilage and bone suffer only secondarily and to the greatest degree in those cases characterized by extensive destruction of tissue. Without causing any appreciable skin irritation, the rays affect structures beneath the cuticle, especially the tissues of the lymphatic system and organs containing highly specialized epithelial tissue. The selective action of the X-rays for destroying epithelial tissue and replacing them with connective tissue has been demonstrated microscopically by examining sections of carcinomata of the breast before and after radiation. Therefore, it is perfectly rational to apply this agent for therapeutic purposes in serious diseases affecting these organs, *if these diseases have proved unamenable to simpler methods.*

Among such diseases are:

SYCOSIS. Here the rays are of value, first, because of their painless and thorough depilatory effect; secondly, because of their germicidal effect. (Case I.)

ACNE VULGARIS. (Case II.)

PRURITUS. (Case XIII.)

PSORIASIS. (Case III.) Those who have had wide experience with psoriasis have called attention to its frequent recurrence. Some have even gone so far as to say that psoriasis would not be psoriasis if it did not recur. The disease retains this characteristic when treated by X-rays. However, the rays produce a speedy disappearance of the lesions.

ECZEMA. The rays have almost a specific action in relieving the itching as well as curing the lesion. (Case IV.)

LUPUS VULGARIS. The rays show marked advantage over the Finsen method in, first, the shorter duration of the exposures; second, the greater area subjected to treatment at each sitting; third, the smaller expense, as no nurse needs to dehematise the

tissues; fourth, the X-ray treatments need be taken less frequently, are readily obtainable, and do not interfere with the patient's business. (Case V.)

TUBERCULAR ADENITIS. No cases present themselves to the surgeon that require more tedious dissection, nor in which recurrences are more common than these. (Case VI.)

EPITHELIOMATA. The X-rays are practically a specific cure for this form of carcinoma, and they obviate the inconveniences necessary for the successful treatment of these conditions by either surgery or escharotics. (Cases VII, VIII, IX, X.)

HODGKIN'S DISEASE. (Case XI.)

SPLENO-MYELOGENOUS LEUKEMIA. (Case XII.)

I do not agree with a great many X-ray therapists who find the rays the best method of curing acne rosacea, naevi, keloid, lupus erythematosus. The X-ray may be a valuable adjuvant in some of these conditions.

CARCINOMA AND SARCOMA.

In cases of malignancy the lesion should be given all the advantages of modern surgery before any time is lost in radiating the tissues. Every day counts and a week may mean a metastasis beyond human power of control. Inoperable cases should always be given the advantage of X-radiations. In selected cases Coley's serum, mercuric cataphoresis, or trypsin treatment may be used in conjunction with the radiations. It is by the hearty co-operation of surgery, radiotherapy, and the judicious adoption of new methods that are worthy that we can hope to progress from "*beneficial*" methods of to-day to the long-hoped-for "*curative*" methods of the future.

The treatment of malignancy by the X-rays is successful or not successful according to the point of view. The seeker after brilliant results is doomed to disappointment if he adopts this field for his energies. In the vast majority of malignant cases the X-ray will reduce the size of the tumor, will diminish or eliminate pain, decrease the discharge making it less offensive, encourage the patient by such signs of improvement, restore hope and add a few years of pleasurable life to their existence, and when they do begin to fail, their exit is usually prompt. These results are certainly not to be despised when one remembers amid what frightful suffering these patients frequently pray for death. The necessity of the morphine hypodermic and its

attendant pain and interference with physiological action are largely eliminated. The fact that the patients eventually die of the disease should not be allowed to overshadow the fact that the symptoms were distinctly ameliorated and a comfortable existence displaced the usual one of torture.

In this connection I can do no better than to quote verbatim from Johnston, who has an unusual trenchant manner of expression: "Carcinoma of the breast is the most common form of malignant disease that many men are called upon to treat. The attacks made on those who dare to suggest anything aside from complete extirpation for the relief and cure of this disease have been very bitter. In many cases they have been justified. Coming from the surgeon, they would be a little better received were the results of extirpation more hopeful. The brutal truth, which is the only thing worth while in this world, is this: Operation alone for the cure of carcinoma of the breast, accompanied by axillary or subclavicular glands, is not a success in the great majority of cases. Those men who are able to keep intelligent records of their patients and follow them for two to three years know this, and some have even dared to say it. In competent hands radiotherapy has accomplished favorable results in these cases, but the combination of radical operation, * * * followed by skilful radiation will cure a much greater proportion of patients than either method alone."

Technique is a very important matter if not the all important *sine-qua-non* of successful X-ray treatment. The man who can produce good actinic effects on a radiographic plate presumably knows more about the character of the rays emanating from an X-ray tube and may therefore be trusted to produce an accurate therapeutic effect on pathological tissues.

"A good agent should never supersede a better. X-rays must not be employed if better results can be obtained surgically with less risk."

"Unless a man can give enough time to radiotherapy to become expert, he is not justified in holding himself out to the world as a qualified operator."

"Radiotherapy can not be learned by reading, any more than operative surgery can be learned by reading alone."

"Knowledge of the use of an apparatus does not accompany it even if it seems to be included in the purchase price."

"The dosage must be suited to the case; if it is not, the work

of weeks may easily be destroyed in a single sitting. It is better to refuse to treat the patient until another day rather than to blindly expose, with a child-like faith that the ray will do good. It may instead, and likely will, do harm."

The writer wishes to acknowledge the free use he has made of extracts from Dr. G. C. Johnston's monograph entitled, "The Therapeutic Uses of the Roentgen Rays;" Dr. Pusey's articles and book entitled, "Roentgen Rays in Therapeutics and Diagnosis," written in collaboration with Dr. E. W. Caldwell.

Case I. Patient had suffered with sycosis non-parasitica (diagnosis confirmed by consultants), for three years. The lesion was confined to the hair-covered portions of the neck and chin, characterized by papules, pustules with hairs protruding from centres, crusts, periods of exacerbations and improvements. The patient had consulted several physicians and specialists without permanent relief. After forty-nine irradiations the case had entirely recovered and has remained well since.

Case II. Patient, adolescent woman, had a very oily skin, numerous comedones and the typical acne eruption over face and forehead. After having been treated medically for several years she was referred to me and after twenty-four treatments the skin presented no lesions.

Case III. Patient, female, aged nineteen years, had typical eruptions of psoriasis (diagnosis confirmed by consultation) over back, abdomen, extensor surfaces of arms and legs. After twenty irradiations, the lesions had disappeared.

Case IV. Patient, female, aged sixty-eight years, had a dry, scaly eczema of left side of head, forehead and scalp. She had had an attack of erysipelas localized in the same area one year previous to the onset of present illness. The eczema did not heal under the medicinal treatment of the case and she was referred to the writer. After four irradiations the patient entirely recovered and has had no recurrence of her symptoms. Note the advanced age of this patient.

Case V. Patient, male, aged thirty-nine years, has lupus vulgaris of the right side of face for the past twenty years. During that time he had consulted the leading skin specialists in England, France, Germany, and the United States, who helped the condition but never completely cured the condition. The accompanying photographs show the patient's condition when the writer first saw him and how the lesion appeared after two hundred irradiations. Unfortunately circumstances arose which interfered with his treatment and he relapsed. Falling in others' care, he was treated with ointments, etc., and at present I do not know what has become of him. This case is purposely mentioned rather than other cases which I have

cured of this disease, first, because of the duration and extent of the disease; second, because the success achieved in this case by good technique was entirely lost under subsequent treatment with a different technique, showing that not every man who can make an X-ray tube fluoresce can successfully give therapeutic treatments.

Case VI. Patient, female, aged twenty-three years, referred by Dr. Elting. Father died of pulmonary tuberculosis. Patient is poorly developed, poorly nourished and an extreme neurasthenic. Three weeks after a very thorough dissection and removal of apparently all the diseased glands there were recurrences not only on the side on which the operation was performed, but also on the opposite side. The patient was in such a hopeless condition that any relief from surgical means were despaired of and the case was referred to me. After thirty treatments the patient had gained in weight and nourishment, the glands had all disappeared except one the size of a date seed and one the size of a pea. The patient subsequently gained seventeen pounds in weight, made a complete recovery and has had no recurrences. (Eighteen months have elapsed since treatment was completed.)

Cases VII, VIII, IX, and X. were all cases of epitheliomata of the skin, diagnosis confirmed by competent consultants. Patients' ages were respectively, thirty-seven, forty-two, forty-nine and sixty years. The lesions were all on the face, were superficial and presented no metastases, they had all resisted treatment by medical, caustic and surgical measures, having lasted respectively for two, five, seven and twelve years. They were completely cured, leaving a scarcely perceptible scar after respectively three, twelve, eighteen and twenty irradiations and have in no instance recurred. One case has been healed longer than three years.

Case XI. Male patient, aged thirty-two years. Diagnosis of pseudo-leukemia verified by competent consultants, and examination of the patient's blood as well as excised tissue. Three times the patient was symptomatically cured, the enlarged glands in the groins, axillae, and neck being made to disappear. Three times he became careless about his treatments and he relapsed. He finally died of the disease.

Case XII. Female patient, aged thirty-seven years; diagnosis of spleno-myelogenous leukemia confirmed by competent clinical microscopists based on the clinical and blood symptoms, myelocytes, etc. Under X-ray treatment the spleen which extended to the lineal alba and the anterior superior spine of the ilium was reduced so that its edge could just be felt at the free edge of the ribs; the hemoglobin was increased from fifty-three per cent. to one hundred per cent.; the leucocytes reduced from over 200,000 per cu. mm. to 18,000 per cu. mm.; the myelocytes disappeared from the circulating blood.

Case XIII. Female, aged fifty-three, physician's wife, has been troubled with puritus ani since birth of child (a period of thirty

years). Although numerous remedies have been tried during this period, including intestinal antiferments, digestive tonics, etc., to correct flatulence, no permanent relief has been obtained. The first treatment relieved the patient for a period of four hours. Ten treatments permanently cured her.

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A CASE OF PRIMARY CARCINOMA OF THE UVULA. OPERATION. NO RECURRENCE.

Read at the thirteenth annual meeting of the American Laryngological,
 Rhinological and Otological Society at New York City,
 May 30, 31 and June 1, 1907.

By CLEMENT F. THEISEN, M. D.,

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Primary carcinoma of the uvula is rare, and a study of the literature of recent years revealed the records of only a few cases in which the malignant process was confined absolutely to the

uvula with every other part of the throat showing normal conditions.

The case I wish to report presents a number of interesting features:

Mr. P. G., aged 52 years, consulted me on March 17, 1906. He stated that for the past three months he had felt a growth in his throat, and at times had had slight pain radiating to the ears. His family history is an excellent one.

On examining the throat it was found that the uvula had been transformed into a somewhat nodular growth. The tumor was firm to the touch and so large that it disturbed him a good deal while eating. His voice was not affected particularly, nor did the growth interfere with respiration. Just at the junction of the uvula and soft palate the mucous membrane appeared normal. The growth had not quite extended to the soft palate, nor was there any induration of the soft palate or any of the surrounding tissues. The rest of the pharynx was absolutely normal, and the naso-pharynx, larynx and nose, also presented normal conditions. A portion of the anterior surface of the growth was smooth, but on the sides and at the tip of the growth, there were firm, nodular excrescences. No enlarged glands could be felt anywhere in the neck. The growth was removed including a small portion of the soft palate on March 20, 1906. The wound was cauterized with a solution of chromic acid. There was very little hemorrhage during the operation.

It is now over fourteen months since the operation and there is absolutely not the slightest indication of a recurrence, the pharynx presenting a perfectly normal appearance. It is in fact rather difficult to find the scar of the operation.

The patient, who before the operation was in rather poor condition, has gained over thirty pounds in weight and is perfectly well. I saw him only a few days ago.

The specimen was sent to the laboratory for examination and the report is as follows:

BENDER HYGIENIC LABORATORY—CASE OF DR. THEISEN No. 06-392.

Specimen consists of a pinkish white nodular mass measuring with pedicle three and five-tenths by two and five-tenths centimeters. The main body of the tumor is a smooth globular mass about one and three-tenths centimeters in diameter and from this protrude two coarsely lobulated papillary masses; the larger measures one centimeter, the smaller five-tenths centimeter in diameter. The body of the tumor is firm and resistant but not as hard as the papillary masses. The pedicle, which measures one centimeter in length and six-tenths centimeter in width, is soft, greyish white on section and covered by mucosa except at point of excision.

Microscopic description.—Sections through the main tumor mass show

large oval or irregular masses of epithelial cells, lying in alveoli formed by fairly definite strands of fibrous tissue. These epithelial cells are very closely arranged, uniformly oval or cuboidal, and do not resemble the ordinary stratified epithelium. Here and there through the larger foci, are a few areas of degeneration and slight leucocytic infiltration. The connective tissue stroma is poor in cells. The capsule of the tumor is formed by a thin layer of squamous epithelium, beneath which is a slight infiltration of lymphoid cells.

Sections through the larger papillary mass show in a general way a similar structure but with a larger amount of fibrous stroma. The squamous epithelium covering this portion shows a tendency to papillary growth. Here is seen also a direct transition of cells from the surface epithelium to the deeper alveolar masses.

Sections taken through the pedicle of the tumor close to the line of excision show a moderate hyperplasia of the surface epithelium but no infiltration of sub-epithelial tissues.

Miscoscopic diagnosis—Carcinoma of uvula.—Dr. Robertson.

I know of course that there may be a recurrence, but the statement that Kyle makes,¹¹ that after the removal of carcinoma of the uvula or soft palate there is an early recurrence, is not borne out by some of the reported cases.

Two very interesting cases of epithelioma of the uvula and soft palate have been reported by Downie³ and Browne.⁵

The patient in Downie's case was a man aged fifty-six years. He had had a sore throat for several months, more marked when he swallowed. The uvula was greatly enlarged and the greater part of its surface was ulcerated. The mass was firm and bled easily. There was no involvement of the regional lymphatics nor cervical glands. The growth was removed and there was no recurrence for seventeen months.

Browne has reported two cases. In one of the cases, a man aged forty-eight years, the uvula had been transformed into a warty thickened mass, and the soft palate was also involved. There were no enlarged glands in the neck. The growth was removed with scissors. A rapidly-growing recurrence occurred in the cervical glands. Patient lived nineteen months after the operation.

In his second case, a man fifty-two years old, there was a warty growth at the free border of the left anterior faucial arch, slightly hanging over the supra tonsillar fossa. A piece removed for examination confirmed the diagnosis. No operation was performed.

Friedmann¹⁰ observed a case in Prof. Baginsky's polyclinic.

A man, aged forty-nine years, had complained of some pain in swallowing. The uvula had been changed into a yellowish red tumor the size of a cherry. There were no regionary metastases. A piece removed for examination confirmed the diagnosis of carcinoma.

Friedman states that up to 1905 he had only been able to find reports of four cases of primary carcinoma of the uvula.

Harmon Smith⁶ has reported a case occurring in a man aged fifty-one years. There was a mass on the uvula as large as a strawberry, the induration extending to the soft palate. There was no involvement of the glands on the right side, but there was a large gland in the left sub-maxillary region. The microscopical diagnosis was epithelioma. The growth, including part of the soft palate, was removed. A month afterwards there was a beginning recurrence in the wound. Three months later there was another recurrence in the wound. Another operation, which included the large gland in the neck, was performed, and five months later, after this operation, there had been no recurrence.

In Raynor's⁷ case, a man aged sixty-six years of age, the uvula was elongated and edematous, and behind it there was a nodular mass attached to its posterior surface and extending one-half inch below the tip. The growth was removed with the cold snare. The pathologist reported that the growth was atypical, but in all probability a carcinoma. There was a recurrence in the wound a little over five months after the operation.

Oppenheimer¹ has reported a case of primary epithelioma of the uvula in a man aged eighty-one years, in which no operation was performed, and McCaw² has reported a case in which the soft palate was also involved. His patient, a woman aged thirty-seven years, was apparently cured after a partial removal of the growth followed by X-ray treatment.

Lieras⁹ has reported a case of epithelioma of the uvula and faucial pillars from Moure's clinic. There was no glandular involvement in his case.

In Zurakowskis'⁴ case, a man seventy-one years of age, the uvula was thickened and firm to the touch. There was ulceration of the upper part of the uvula and part of the soft palate. The submaxillary glands were enlarged. The microscopical diagnosis was carcinoma keratodes.

Newman⁸ has reported a case of adenocarcinoma of the left

tonsil, soft palate and uvula. It was removed through the mouth. No recurrence for six years.

Of the cases mentioned in the writer's paper (the cases reported in the literature of recent years), in only six was the malignant growth absolutely confined to the uvula. They are Downie's, Friedmann's, Smith's, Raynor's, Oppenheimer's and the writer's. In Downie's case there was no recurrence for seventeen months after operation. Friedmann's—No operation. Harmon Smith's—Recurrence three months after first operation, no recurrence five months after second operation. Raynor's—Recurrence five months after operation. Oppenheimer's—No operation. Theisen's—No recurrence fourteen months after operation, and none to the present time. (Prof Killian of Freiburg, Germany, saw this patient and found the throat perfectly normal.)

The fact that in some cases of malignant growths of the uvula and soft palate there is no recurrence for such a long time after operation (Newman's case six years) would go to show that such growths involving the muciparous glands are of slow growth, with less chance for recurrence than when they extend through the lymph channels, as would be the case with malignant growths of the tonsil. (Since writing this paper the author has seen Dr. Smith's patient. It is now about three years since the last operation and there has been no recurrence. The pharynx appears normal.)

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AN IMPROVED FORM OF BRACE FOR TREATING FLAT OR WEAKENED CONDITIONS OF THE FOOT.

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In an article appearing in the *ALBANY MEDICAL ANNALS* for September, 1906, I discussed the indications for the use of an arch support in weakened conditions of the foot. These indications can be summed up as follows:

(1) Cases of flat-foot, non-rigid, after the deformity has been reduced and pain relieved by the use of adhesive strapping or plaster of paris casts.

(2) Cases of rigid flat-foot that have been reduced by operative means.

(3) All cases of weakened arch of the foot which need support of the arch until the foot itself can be strengthened.

(4) Paralytic cases.

(5) Cases of weakened foot where there may be no actual falling of the arch, yet a proper brace is beneficial in that it tends to make the foot assume such a position as will throw the weight of the body on to the outer side of the foot, that part of the foot which is normally adapted for it.

(6) Cases of pronated foot; a condition most frequently seen in young people where there is a rolling downward and inward of the ankles. (This condition was formerly diagnosed as weak ankles.) In these cases the use of a brace throws the foot into a proper position in relation to body weight and progression.

(7) The use of a brace is often of benefit in cases of enlargement and painfulness of the metatarso-phalangeal joint of the big toe, even when no weakened condition of the foot can be found to account for the trouble. In these cases a brace gives relief by throwing the weight more to the outer side of the foot and relieving pressure from the big toe joint.

The different styles of flat foot braces that have been devised are too numerous to mention; but all of them seem to be lacking in some of the requirements of a brace.

The requirements of a brace are: (1) The brace must fit the foot accurately; being made over a plaster cast of the foot.

(2) The brace should support the longitudinal arch of the foot.

(3) The brace should extend high enough internally to prevent internal lateral deformity of the foot. Internal lateral deformity is an element of weakened foot of almost equal importance to lowering of the arch. (4) The arch-supporting portion of a brace should be movable so as not to splint the foot. (5) The brace should be comfortable. (6) The brace should be easy of construction.

In the article already referred to I gave an outline drawing, and described the manner of making, of a brace which I had found most nearly met all of the above-mentioned requirements.

The brace was made in two parts: An arch-supporting part proper which supported the inner longitudinal arch of the foot and a base piece which fitted into the heel of the shoe and served to hold the arch-supporting portion in place. The arch-supporting portion was fastened to the base piece in such a manner that it was not held rigidly but could move slightly with the foot upon the base piece.

The arch-supporting portion was of galvanized steel made by an instrument maker over a plaster cast of the arch of the foot. The base piece was made of nickeled brass and had to be cut out and fitted by the surgeon after the arch-supporting portion had been obtained.

There were several disadvantages in such a brace, all of which were associated with the base piece. The base piece always wore out very quickly and had to be frequently replaced; it was flat and did not fit the bottom of the foot accurately, and it necessitated considerable trouble on the part of the surgeon to make. Since the publication of the article describing the brace as above mentioned, the brace has been modified so as to obviate all these disadvantages; and the improved brace and method of making are here described.

After the foot is oiled with vaseline an outline of the brace, including both the arch-supporting portion and the base piece, is drawn on the foot with a dermatographic pencil and a plaster mold made of the arch of the foot, *including* the heel. In making the mold the leg is flexed at the knee and the foot rests upon a support with its internal surface upward. The foot rests in a shallow, open, rectangular box, one long side of which has been removed. The ball of the foot rests against the long side of the box and the bottom of the heel is held about an inch from the side of the box. The back of the heel, however, rests against

one end of the box. The space between the foot and the side of the box is filled with plaster cream and the plaster cream is spread up over the foot to include the arch and heel. The dermatographic pencil outline of the brace transfers to the mold. The mold is coated with vaseline; the dermatographic outline freshened and a plaster casting made. The dermatographic outline again transfers and following this outline a drawing of the brace is made on the cast. By making use of the dermatographic pencil outline as above described no mistake can be made by either the surgeon or instrument maker as to the proper position on the cast over which to fit a brace. The arch is cut out higher or shaped up as desired and the cast sent to the instrument maker.

The instrument maker constructs a brace fitting the cast and following the outline drawn upon it. Both the arch-supporting portion and the base piece are made of galvanized steel; the weight and strength of the steel depending upon the weight of the individual for whom the brace is made. A photograph of a completed brace (detached) is shown in Fig. 1. In this form of brace the surgeon does not have to bother to make the base piece; moreover the base piece fits the heel and bottom of the foot accurately and it will not readily wear out.

Occasionally it is necessary to give support to the anterior arch of the foot as well as to the internal longitudinal arch. In such a case all that it is necessary to do is to extend the base piece anteriorly and give it a transverse arch (see Fig. 2): the necessary outlining and cutting away being made on the cast before it is sent to the instrument makers.



Arthur Clennam turned; and walking beside the litter, and saying an encouraging word now and then, accompanied it to the neighboring hospital of Saint Bartholomew. None of the crowd but the bearers and he being admitted, the disabled man was soon laid on a table in a cool, methodical way and carefully examined by a surgeon: who was as near at hand, and as ready to appear, as Calamity herself. "He hardly knows an English word," said Clennam; "is he badly hurt?" "Let us know all about it first," said the surgeon, continuing his examination with a business-like delight in it, "before we pronounce."

To Illustrate Dr. Berry's Article on "An Improved Form of Brace for Treating
Flat or Weakened Conditions of the Foot."

Albany Medical Annals, August, 1907



Little Biographies

XX. WILLIS.

THE name of Willis is familiar to the profession through a system of connecting arteries at the base of the brain, known as the "Circle of Willis." Thomas Willis was an English anatomist and physician, living in the middle period of the seventeenth century. He was born January 27, 1621, at Great Bedwin in Wiltshire; and his father was one Thomas Willis, of North Henxsey, near Abingdon; the son of a tailor and a man of some education, having been a retainer at St. John's College, although not a college graduate. His mother, Rachel Howell, was of an ancient family in Berkshire.

Young Willis received his preliminary education under Edward Sylvester in the parish of All Saints, Oxford, and in 1636, when fifteen years old, he entered Christ Church College, becoming a retainer in the family of Dr. Theo. Iles, canon of Christ Church.

Willis received the degree of A. B. from Oxford in 1639, to be followed three years later by the degree of A. M. He then applied himself to the study of medicine, but before the completion of his medical studies, he became involved in the great revolution of the Roundheads under the leadership of Oliver Cromwell against King Charles I. The last stand of the Royalist forces was made at Oxford, and when that city was garrisoned for the King, Willis fought with the Royalists. After the surrender of the garrison, early in 1646, Willis resumed his medical studies, received the degree of Bachelor of Medicine December 8, 1646, and immediately entered upon the practice of medicine in Oxford. He kept Abendon market every Monday and took a house opposite Merton College. It is worthy of note that true to his royalistic principles, he appropriated one of the rooms in his house to Divine worship, to which most of the loyalists in Oxford resorted. John Fell, whose sister he had married, was a frequent preacher here.

In 1660, shortly after the Restoration, Willis was appointed Sedlein Professor of Natural Philosophy at Oxford in the place of Dr. Joshua Cross, who was ejected, and in October of the same year, he was given the degree of Doctor of Medicine. Willis was an early fellow of the Royal Society, and in 1664 he was made an honorary fellow of the College of Physicians.

In 1666, after the great fire in London, and at the invitation of Dr. Sheldon, the archbishop of Canterbury, Dr. Willis removed to London and took up his residence in St. Martin's Lane. At this time his reputation and skill marked him as one of the first physicians of his time. This reputation preceded Willis to London and introduced him at once to an extensive and lucrative practice. It has been said that he made more money yearly than any other physician in London. He died November 11, 1675, and was buried in Westminster Abbey.

Willis has been described as a plain man, unpretentious in appearance, quiet in manner, and caring little for society. He was not afraid to express his opinions, however. It is related that he was consulted about the state of health of the male children of the Duke of York, afterwards King James II, by his first wife; all of whom it seems were suffering more or less from disease originating in the amours of their father. Dr. Willis spoke his mind freely saying, "*Mala stamina vitae*," thereby giving great offense; and, it is needless to say, was never afterwards consulted.

The character of Willis was that of an orthodox, pious and charitable physician. Some years before his death he settled a sum on the Church of St. Martin's-in-the-Fields, for the daily reading of prayers, early and late, to such servants and people of the parish who could not, through multiplicity of business, attend the ordinary service. He was admired for his piety and charity and for his deep insight into natural and experimental philosophy, anatomy and chemistry and for the elegance and purity of his Latin style.

Willis made important medical discoveries concerning the brain, and it is claimed that he first suggested the possibility of localization of function in the brain and published two treatises on the subject: "*Anatomy of the Brain*," 1664, and "*Pathology of the Brain and Nervous System*," 1667. He published numerous other works, and his complete works, "*Opera Omnia*," were published in Geneva in 1676. They were translated into English in London in 1684.

Hutchinson says that his proceedings in his inquiries and writings were unfortunate for his reputation. Instead of busying himself in observation and experiment, he was exercised in framing theories. As a consequence, while his books show the greatest ingenuity and learning, very little knowledge is to be drawn

from them, and very little use can be made of them. His works were soon laid aside and neglected.

JOHN M. BERRY.

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Scientific Review

THE VIABILITY OF THE TYPHOID BACILLUS UNDER NATURAL CONDITIONS.

Simple of solution as this subject may appear to be to the uninitiated, it is in reality one which has occupied the attention of bacteriologists and engineers for many years. However, upon certain aspects of the subject much has apparently been accomplished in the last five years.

That the subject is of importance is quite evident to those who have followed the results of the studies of outbreaks of typhoid fever published during the last decade. Such studies are demonstrating more and more that epidemics of the disease are caused by unusual combinations of natural and artificial conditions which cannot be foreseen or foretold, and which can only be prevented by directing special attention in two directions: first, towards the great public improvements in water purification, sewage disposal, and milk production and distribution; and, second, toward the proper hygienic management of each case of the disease.

This review will not attempt to consider the latter aspect of the subject in which the relation of the typhoid bacillus to the infected patient would naturally come under discussion, but will deal with the fate of the typhoid bacillus as it passes from such a patient out into nature.

It will first discuss some of the available evidence as to the fate of *Bacillus typhosus* when deposited in various kinds of natural soils, or earths.

Firth and Horrocks¹ reviewed the work done on this phase of the subject down to 1902, and concluded that the results were too contradictory and unsatisfactory to be accepted. They undertook to demonstrate the fate of *Bacillus typhosus* in moist and dry soils of various kinds under natural conditions, such as

the presence and absence of direct sunlight and the effect of the washing of the soils by rains. Their results are of great interest and importance.

They found that the typhoid bacillus had a long life, of at least two months, in the various soils when the same were kept moist; that they showed no tendency to multiply in such soils, or to grow in any direction; that they could be washed by water for at least eighteen inches through fine earth closely-packed without cracks or fissures; that the presence or absence of organic matter or sewage in the soil did not materially affect its existence, either favorably or otherwise; that when any of the kinds of typhoid contaminated soils or earths were allowed to dry so as to form dust the typhoid bacillus could be found living in it after twenty-five days, and that the dust blown from such dirt contained living typhoid bacilli.

They likewise found that one hundred and twenty-two hours of direct sunlight during twenty-one days was not sufficient to kill the typhoid bacillus present in soils. They also ascertained that the freezing of soil containing typhoid bacilli for periods of several days did not completely kill these bacteria.

In none of the experiments made by these authors were attempts made to determine quantitative viability as well as qualitative, and they are open to this objection.

Rullmann² found that the typhoid bacillus lived for at least a year and a half in otherwise sterile earth and gravel, but in that time had died out in sand. The numbers were greatly reduced, however, in all, and this reduction was greater in the earth than in the gravel.

Levy and Kayser³ claim to have found living typhoid bacilli in clayey garden soil which had been manured with the contents of a water-tight privy into which typhoid infected stools had been deposited five months previously.

From the results of these investigators, it would appear that all forms of moist human excrement, dirt, soil, sand or gravel, favor the viability of the typhoid bacillus, while even the same materials in a dry state support its existence for a considerable period, often over a month. It would also appear that freezing and direct sunlight have but little effect upon the typhoid bacillus in soils, and that they can be washed for a considerable distance through well-packed earth and retain life.

These conclusions on laboratory investigations are in entire

harmony with the known facts concerning the origin of numerous epidemics of typhoid fever. In many of these cases it has been shown that typhoid discharges thrown upon the surface of the ground, or buried superficially, during the winter, and which have remained in these locations for several months undergoing freezing and more or less exposure to sunlight, have finally been carried into waters used for potable purposes and have produced wide-spread epidemics. The New Haven, Conn., epidemic of 1901 was brought about in this way. Many other instances of a similar kind could be quoted.

When we come to the consideration of the experiments on the viability of the typhoid bacillus in water and sewage, the results are found to be somewhat different.

In water the typhoid bacillus is subject to conditions and agencies of a physical, chemical, or biological character. The physical agencies, such as gravity, sunlight and temperature, probably play a most important part in rendering water an unfavorable soil for the existence of the typhoid bacillus, but chemical agencies, such as the presence of metals or inorganic compounds, absence of oxygen and usable organic matter, likewise play a considerable rôle in this direction under certain circumstances, while the biological agencies such as the indirect or direct antagonism of other bacteria and of protozoa likewise aid materially in the destruction of these pathogenic bacteria.

One of the most potent factors in the elimination of typhoid bacilli from water is sedimentation. The effect of this agency is so well known and consistently recognized that it is not necessary to dwell upon it at length. Sedimentation was the agency to which Jordan⁴ attributed a large part of the purification of the Chicago Drainage Canal and the Illinois river. This force, of course, acts in inverse proportion to the amount of current, or motion, in a body of water. Bissell⁵ has stated that he found as many colon bacilli in the waters of Niagara river below Niagara Falls as above it. The fate of the typhoid bacillus after it has reached the bottom of a body of water has not been studied to any great extent. The solution of the problem has no great practical importance except in connection with the matter of the pollution of edible shell fish, such as oysters and clams.

Savage⁶ studied the effect of what he calls tidal mud upon the typhoid bacillus, and found that the latter can survive fairly readily for two weeks in tidal mud, but that after this period

their numbers rapidly diminish. He believes that the examinations of mud when obtainable form a better index of the pollution of a stream or other body of water than the examination of the water itself.

That direct sunlight, and even diffuse daylight, has a marked destructive effect on typhoid bacilli, as well as on other bacteria in water, has been well recognized since the early work of Buchner.⁷ He concluded that direct sunlight is a more potent factor in reducing the number of bacteria in natural bodies of water than sedimentation.

Procacci exposed water in deep cylinders to the nearly vertical rays of the sun, and found that after three hours the water in the cylinders was sterile to the depth of one foot, while at a depth of two feet the typhoid bacilli were unaffected.

Clark and Gage⁸ found that typhoid bacilli in a thin layer of water were destroyed by the direct sunlight in one hour, and that when they were exposed in bottles of water their extinction was accomplished in five hours.

Wheeler⁹ has shown that diffuse daylight has a detrimental action on *Bacillus typhosus* in waters contained in glass bottles.

Weinzirl¹⁰ has recently shown that direct sunlight has an even more powerful germicidal action than has been shown by previous experimenters. The defects in former methods of testing were caused by the deflection, reflection and absorption of the sun's rays by the glass vessels, etc., used to maintain the specimens free from contamination by foreign bacteria.

While sunlight unquestionably has a very destructive effect upon typhoid bacilli in water under most natural conditions, its failure to seriously affect these bacteria when the latter were placed in earth and dirt, as shown by the Firth and Horrocks' tests already referred to, indicates that there must be some other condition than the mere presence of the sunlight which gives material aid to its disinfecting action when the bacilli are in water. This will be again referred to when the effects of the presence and absence of dissolved oxygen in the water is taken up for consideration.

The effects of different degrees of temperature on typhoid bacilli in water is most interesting. As is well known, the optimum temperature for its growth in culture media is that of the human body.

Clark and Gage¹¹ found that when in water it could resist a

temperature of 80° C. for five minutes. However, they found that the optimum temperature for the viability of the bacillus in water was 20°-22° C., or the so-called room temperature, and that 37° C. or the body temperature exerted a detrimental effect. This has been confirmed by Konradi and Bolton¹² and by Wheeler,¹³ who in addition has shown that the room temperature is more favorable to typhoid bacilli in water than is that of the refrigerator. He also states that temperatures approximating 0° C. and 32° F. are decidedly detrimental to these bacteria in at least three classes of waters.

Smith and Swingle¹⁴ state that the critical temperature for the life of bacteria is about 0° C.

One of the first tests of the effect of actual freezing upon *Bacillus typhosus* was made by Prudden¹⁵ in 1887. By the methods of testing which he used, namely, to freeze small amounts of water containing typhoid bacilli, he found that they lived in ice for 103 days.

Later Park¹⁶ repeated these experiments, but made quantitative as well as qualitative tests, and determined that the decrease in the number of the typhoid bacilli was exceedingly rapid during the first few days or weeks. At the end of three weeks less than one per cent. were alive.

Zeit¹⁷ also repeated Prudden's experiment and found that the typhoid bacilli were completely killed by freezing in twenty-four hours.

Clark and Gage¹⁸ operated with much larger volumes of both water and sewage. They have shown that the typhoid bacillus is killed rapidly in both the freezing process and by low temperatures just short of freezing.

Many other experiments were made by them in which the typhoid bacillus was not introduced into the operations, but from the results of which conclusions as to effect of freezing on the typhoid bacillus in water under natural conditions might with propriety be drawn.

Thus they found that from ninety-five to ninety-nine per cent. of all the water bacteria, and all of the colon bacilli in either water or sewage, were removed by freezing.

Samples of ice, and water under the ice, were taken by them from the polluted Merrimac river at points varying from three to eight and a half miles from the outlets of the sewers of a city of 90,000 inhabitants, and the ice had less than three-tenths

per cent. of the number of bacteria present in the water under it, and no colon bacilli were found in the ice.

Clark¹⁹ believes that in the process of freezing the bacteria, along with particles of dirt, substances in suspension and some of the mineral constituents of the water are expelled into the underlying water. He thinks, therefore, that the physical condition of the water while freezing is of great importance, as this expulsion takes place most satisfactorily when the water is quiet.

Wheeler²⁰ obtained very similar results to those quoted, in his laboratory tests of freezing typhoid bacilli in relatively small amounts of water. However, he does not consider Clark's explanation of the causation of the decrease in the numbers of bacteria in ice by expulsion as the correct one. He floated porcelain capsules containing some of the same typhoid inoculated water as was in the pails they were floating in, and found that the typhoid bacilli were killed as completely and rapidly in the capsules as in the surrounding ice. He also obtained about as complete destruction of the typhoid bacilli in the underlying water in the pails as in the ice. However, his work was done on small volumes of water previously sterilized by heat and under laboratory conditions, while Clark's and Gage's work had been done under more natural conditions in large volumes of water.

Wheeler obtained samples of ice and water from Lake Champlain at distances varying from thirty to several hundred feet from the sewer outlets of the city of Burlington. In the samples collected but thirty feet from the sewer outlets there were macroscopic evidences of sewage. *Bacillus coli* was not found in any of the ice samples, but was present in large numbers in the underlying water.

Smith and Swingle²¹ obtained a percentage destruction of over ninety-nine in their laboratory freezing tests of the typhoid bacillus in bouillon. They believe from freezing experiments done on other species of bacteria that when a few organisms out of a culture show a special resistance to the freezing, that this resistance is due to absence of water in the protoplasm of those particular bacteria, and that they behave, therefore, like endospores, although the species may be one in which no endospores are to be found. Prudden, Park and others quoted, found a small percentage of the typhoid bacilli in their cultures more resistant than the majority, and this endosporelike formation may be the explanation.

All the authors unite in the conclusion that repeated freezings and thawings are more destructive to typhoid bacilli than the single freezings.

There exists one reported instance in which not only was typhoid fever apparently transmitted to well persons by means of ice, but in which the investigators believed that they isolated typhoid bacilli from the ice in question.

Hutchings and Wheeler²² reported the occurrence of thirty-nine cases of typhoid fever in the St. Lawrence State Hospital at Ogdensburg, N. Y., under conditions which led them to state, with some degree of certainty, that the disease was due to the use of ice taken from the St. Lawrence river.

They examined clear ice taken from the river five months previously, and which had been stored in one particular ice house, the ice from which they had suspected as being the cause of the disease. In this ice were particles of dirt, and from these they isolated in pure culture several colon bacilli, and one which they considered *Bacillus typhosus*.

If Clark's theory concerning the elimination of particles of dirt, etc., from still water as it freezes is correct, and it is generally accepted, then this ice must have been formed when the water was in active motion or the ice was flooded with the infected water and opportunities for the exclusion of the dirt prevented, or under some other very unusual condition.

Ice had been cut from this location for the twelve years prior to the outbreak, and no typhoid fever traceable to it had been observed. It is of special significance that all the ice suspected of causing the disease came from one particular ice house, although all were filled with ice from the same general location. The conclusion would seem to be irresistible that the pollution of this ice came about in some very special manner, the true nature of which the authors did not determine.

Hill,²³ in a report on the ice supply of the city of Boston, remarks that the purification of polluted water which takes place during the process of freezing, and including the subsequent three weeks, is equivalent to the filtration of that water by the most efficient slow sand filters. This opinion is in harmony with those expressed by Sedgwick²⁴ and others.

But little is known of the effect, if any, of the natural mineral constituents of water upon the typhoid bacillus, and it is not intended to here discuss the subject of the effect of the artificial

addition of inorganic elements or compounds, such as copper sulphate, for the destruction of bacteria.

The oxygen content of a given water containing typhoid bacilli is undoubtedly a factor of the greatest importance in relation to the viability of these organisms, and it has as yet received but little attention.

Whipple and Mayer²⁵ have, however, clearly shown that the absence of dissolved oxygen has a most decided and rapid detrimental effect upon typhoid bacilli in both water and bouillon. They question whether this fact has been given the consideration which it deserves in the interpretation of the results of laboratory experiments upon the viability of this organism. In interpreting experiments in which small amounts of water, sewage or bouillon sterilized by heat are utilized, we should certainly take into consideration the question of the lack of oxygen in such liquids. The difference in resistance of the typhoid bacillus in soils and in liquids under apparently similar physical conditions, as already noted, may possibly be due to a greater amount of oxygen in the soils than in the liquids.

This conception of Whipple and Mayer is of the greatest importance, as it involves the question of the effect of the almost total lack of oxygen in the effluent of septic tanks upon the typhoid bacilli which are present in most raw sewages. If typhoid bacilli cannot exist for more than one or two days in the septic tank, it is a fact of the utmost importance.

The relation between the presence of organic matter in water and the viability of the typhoid bacillus is likewise an important matter.

In the early days of bacteriology Bolton showed that in water repeatedly redistilled and inoculated with typhoid bacilli, so as to avoid introducing organic matter, the typhoid organisms died out rapidly.

Wheeler²⁶ also shows that the less organic matter present in water the less favorable the influence upon the viability of the typhoid bacillus.

By far the most extensive and valuable series of tests made upon this phase of the subject were those of Jordan, Russell and Zeit,²⁷ and later of Russell and Fuller.²⁸ They tested the effect of natural conditions, excluding sunlight, upon typhoid bacilli in various unpolluted and polluted waters and sewage enclosed

in celloidin, agar or parchment capsules, which then were immersed in similar fluids.

All possible grades and combinations from relatively pure waters to sewage inside these permeable sacs, and from sewage to relatively pure waters outside of them, and varying conditions from those obtaining in nature to those present in the laboratory, were utilized in these tests.

The authors conclude that in relatively pure waters, of a surface character, the typhoid bacillus is capable of retaining its vitality for about eight days.

When the typhoid bacillus was inoculated into sewage it completely disappeared in five days, and even in two or three days the major part of the organisms were killed. They believe, therefore, that the typhoid organism in natural sewage does not live as long as it will in relatively pure water.

They believe that the activity of the saprophytic bacteria in sewage and polluted waters play a considerable rôle in this rapid destruction of the typhoid organism. However, the most convincing work on this aspect of the subject has been done by Frost.²⁰ He worked with a similar technique, consisting of celloidin sacs containing typhoid inoculated fluids, with growths of saprophytic bacteria in the water or bouillon in which the sacs were placed.

The saprophytic bacteria he used were obtained from garden earth, street dust, sand and various waters. In many tests the soils themselves were inoculated into the liquid surrounding the sacs.

Frost found that the typhoid bacilli were rapidly killed in these sacs by thermostabile products of the growth of certain soil bacteria (*B. vulgatus*, *B. vulgaris*, *Pa. fluorescens* and *Pa. putida*) which acted best at body temperature, but which were apparently uninfluenced by other conditions. These products operate, however, only when these bacteria are grown with or slightly in advance of the typhoid bacillus. These thermostabile substances undoubtedly, therefore, play a large and direct part in the destruction of typhoid bacilli in water and sewage under natural conditions.

Frost was unable to explain their very feeble action at low temperatures, nor is there any explanation as yet offered as to why they do not act more promptly on typhoid bacilli in soils.

It may be possible that they operate more strongly in the absence of oxygen. Frost was not specially clear on this point.

Wheeler³⁰ found a harmless saprophyte, *Bacillus carotovorus*, which actually stimulated the development of the typhoid bacillus when sown with it.

Huntemüller³¹ has shown that various low forms of protozoa are capable of feeding upon typhoid bacilli.

Klein³² has shown that normal oysters, clams and other shell fish when grown in unpolluted waters do not contain *Bacillus coli* or sewage bacteria in their intestinal canals. However when they are placed in sewage polluted waters they become badly contaminated by such organisms. Nevertheless, if they are removed from such polluted waters and kept under favorable conditions, they have the power of freeing themselves from both these colon and typhoid bacilli previously taken in. The rate at which this is accomplished depends upon the severity of the pollution.

HERBERT D. PEASE.

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Births at term.....	98
Marriages	116
Still births.....	5
Premature births.....	2

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were two hundred and seventy inspections made of which one hundred and seventy-six were old buildings and ninety-four were new buildings. There were sixty-nine iron drains laid, twenty-five connections to street sewers, thirty-three tile drains, four urinals, forty-seven cesspools, sixty-eight wash basins, ninety-seven sinks, sixty-six bath tubs, sixty-one wash trays, two butler's pantry sinks, fourteen trap hoppers in yard, one hundred and forty-two tank closets, one stable wash stand, one horse trough. There were ninety-two permits issued, of which seventy were for plumbing and twenty-two for building purposes. There were forty-two plans submitted, of which fifteen were of old buildings and twenty-seven of new buildings. Fourteen houses were tested on complaint, eleven with blue, red, and three with peppermint and there were eighteen water tests made. Sixty-five houses were examined on complaint and ninety-two re-examined. Thirty-eight complaints were found to be valid and twenty-seven without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases reported.

	1903	1904	1905	1906	1907
Typhoid fever.....	2	4	4	1	2
Scarlet fever.....	5	26	6	17	16
Diphtheria and croup.....	11	7	17	47	41
Chickenpox	4	1	1	4	8
Measles	118	6	32	2	18
Whooping cough.....	0	0	3	1	0
Consumption	1	1	0	2	17
Total	141	45	63	74	102

Contagious Diseases in Relation to Public Schools.

	REPORTED		DEATHS	
	D.	S. F.	D.	S. F.
Public School No. 1.....	1			1
Public School No. 5.....	2			
Public School No. 6.....		1		
Public School No. 13.....	1			
Public School No. 15.....	1	2		
Public School No. 17.....	1			
High School.....	1			
St. Mary's School.....	1	1		
Lady Help of Christians.....	1			

Number of days quarantine for diphtheria:

Longest..... 33 Shortest..... 9 Average..... 16 10-16

Number of days quarantine for scarlet fever:

Longest..... 66 Shortest..... 23 Average..... 35 3-5

Fumigations:

Houses..... 38 Rooms95

Cases of diphtheria reported.....	41
Cases of diphtheria in which antitoxin was used.....	39
Cases in which antitoxin was not used.....	2
Deaths after use of antitoxin.....	4

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906	1907
Initial positive.....	15	8	4	9	30	25
Initial negative.....	19	15	14	13	39	28
Release positive.....	25	9	1	0	23	52
Release negative.....	11	17	6	9	61	108
Failed	2	6	0	0	29	16
Total	72	55	25	31	182	229

Examination for tuberculosis:

Initial positive.....	4
Initial negative.....	30

MISCELLANEOUS.

Inspection of mercantile establishments.....	0
Mercantile certificates issued to children.....	26
Factory certificates issued to children.....	26
Children's birth records on file.....	52
Number of written complaints of nuisances.....	83
Privy vaults	8
Plumbing	40
Other miscellaneous complaints.....	35
Total number of dead animals removed.....	719
Cases assigned to health physicians.....	51
Calls made.....	184

BUREAU OF MARKETS AND MILK.

Wagons and milk in clean condition.....	13
Wagons and milk in unclean condition.....	0
Ice on cans.....	13
Butter fats below 3%.....	1
Butter fats from 3 to 3.5%.....	1
Butter fats from 3.5 to 4%.....	11
Butter fats over 4%.....	2
Solids below 12%.....	1
Solids from 12 to 12.5%.....	1
Solids from 12.5 to 13%.....	5
Solids over 13%.....	8
Meat condemned.....	0

BUREAU OF MILK.

No.	Specific Gravity	BUTTER FATS.			SOLIDS.			
		Under 3%	3 to 3.5%	3.5 to 4%	Over 4%	Under 12%	12.5 to 13%	Over 13%
20.....	32.3	..	..	I	..	..	I	..
27.....	33.4	..	..	I	..	..	..	I
46.....	33.4	..	..	I	..	..	..	I
55.....	33.4	..	..	I	..	..	..	I
65.....	33.4	..	..	I	..	..	..	I
	32.4	..	..	I	..	..	..	I
83.....	30.4	I	..	..	..	I	..	..
146.....	31.3	..	..	I	..	..	I	..
176.....	32.4	..	I	..	..	..	I	..
180.....	31.3	..	..	..	I	..	I	..
184.....	33.4	..	..	..	I	..	..	I
195.....	32	..	..	I	..	..	I	..
	34	..	..	I	..	..	..	I
302.....	32.3	..	..	I	..	..	I	..
144.....	32.3	..	..	..	I	..	..	I

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

The annual meeting of the Medical Society of the County of Albany was held in the Albany Medical College on Wednesday evening, May 8, 1907. The meeting was called to order at 8:30 P. M., President Lempe in the chair. The Secretary, Dr. Laird, not being present, Dr. C. H. Moore was appointed Secretary pro tem. The following members were present: Drs. Applebee, Baldauf, Bartlett, Bedell, A. J., Bedell, E. J., Bendell, H., Blair, Blatner, Blessing, A. J., Bristol, Case, Classen, Cook, Curtis, Devoe, Garlick, George, Giffen, Gutmann, Hacker, C. G., Hinman, Holding, Joslin, Keens, Keough, Leavy, Le Brun, Lempe, Lewi, Lochner, Lomax, MacFarlane, MacHarg, Mereness, Mitchell, Moore, C. H., Moston, Mun-

son, Murray, Myers, Neuman, O'Leary, D. V., Jr., Papen, Perry, Rooney, Root, Rulison, Ryan, Sheldon, Stevenson, Stillman, Ullman, Vander Veer, J. N., Washburne, Wiltse, Winne, L. B.

1. *Reading of the minutes of the last meeting.*

On motion of Dr. MERENESS, seconded by Dr. GEORGE, the reading of the minutes was dispensed with, they standing as corrected by those who had participated in the discussion.

2. *Report of the Comitia Minora.*

The Comitia Minora made no report.

3. *Report of Officers and Committees.*

The Treasurer, Dr. WM. H. GEORGE, presented the following report:

Balance on hand May 31, 1906.....	\$34 67
Collection during fiscal year.....	943 00
	<hr/>
	\$977 67
Disbursements during fiscal year.....	693 97
	<hr/>
Balance	\$283 70
Due State Medical Society.....	159 00
	<hr/>
Net balance at time of annual meeting.....	\$124 70
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Dr. NEUMAN moved that the report be accepted, and that the President appoint an auditing committee of three.

Motion duly seconded and carried.

The President appointed as Auditing Committee, Drs. BLESSING, MURRAY and HACKER.

The Board of Censors, through Dr. CURTIS, presented the following verbal report.

"The names of several candidates for membership in the Society have been brought before the Board of Censors, from time to time, during the year, action taken thereon, and the candidates recommended to the Society for election to membership.

"The Censors feel that it is important, and vital to the welfare of the Society, that it should wipe out as far as possible all scholastic differences, and in admitting to membership consider only whether the candidate is a reputable, honorable member of his chosen profession, and wishes that the Society would revise its action in relation to one candidate recommended by the Board of Censors for membership."

Dr. GEORGE moved that the report of the Board of Censors be received. Duly seconded and carried.

Committee on Legislation. Chairman, Dr. ROOT.

"The principles underlying the so-called 'Medical Unity Bill' have been the subject of acrimonious discussion before the Legislature of the State of New York for the last eight years. These principles are so just that as mere statements of abstract ideas, no argument has been able to destroy or discredit them.

"But in the application of these general principles, certain special privileges and private interests are interfered with, and the struggle of eight years has been to overcome the opposition of those whose special privileges would be destroyed if these general principles are enacted into law.

"By common consent the practice of medicine has progressed more in the last hundred years than has any other branch of science. Indeed medicine is a clearing house for many separate fields of scientific endeavor.

"The practice of medicine has been of such vital importance to the health of the people that from the beginning the State, under its police power, has undertaken to regulate its practice. *These regulations by statute law have not advanced as rapidly as the science itself, and the present Unity law is an effort to bring the laws regulating the practice of medicine up to the same state of advancement as the science itself.*

"The main statutes affecting the practice of medicine in New York are as follows: L. 1760 Ch. CXCVIII (Colonial Laws N. Y. vol. 5, p. 455); L. 1792 Ch. 37; L. 1797 Ch. 45; L. 1801 Ch. 144; R. L. 1813 Ch. 94, Art. 20; R. L. Pt. 1, Ch. 15, Pt. 7, Arts. 16-25; L. 1844 Ch. 275; L. 1874 Ch. 436; L. 1880 Ch. 513; L. 1887 Ch. 647; L. 1893 Ch. 661 (Public Health Law); L. 1895 Ch. 398.

"A study of these laws shows that the tendency at the beginning was to emphasize the *system of therapeutics* as the most important part of medicine. Originally all physicians administered drugs in practically every kind of disease. Then physicians began to differ about the size of the dose, and the kind of medicine to be given in a given case. Whenever a sufficient number of physicians began to follow a given system of therapeutics they demanded legal recognition, and in that way the allopaths, homeopaths and eclectics had their system of drug giving recognized by the State. The followers of these respective sects can go before an examining board composed of men who believed in administering drugs after the theory held by the applicant himself.

"Presently the 'no drug' sects came into the field, styling themselves by various names, descriptive of their particular system of therapeutics: 'Hydropaths,' 'Naturopaths,' 'Somatopaths,' 'Vitopaths,' 'Osteotherapists,' 'Osteopaths,' etc. These sects also asked for separate examining boards, to crystalize their own special theory of healing into legal enactment.

"But progressive medical men and scientists, regardless of their theory of drug giving or non-drug giving, began to insist that there were certain fundamental subjects, exact in their scope and application that were the very foundations of the healing art. This advance guard of scientific medicine insisted that the following subjects be mastered by every physician before he is competent to practice his profession, viz.: Anatomy, Physiology, Hygiene, Sanitation, Chemistry, Surgery, Obstetrics, Gynecology, Pathology, Diagnosis, Bacteriology, Medical Jurisprudence.

"The 113th Annual Report of the Board of Regents succinctly states that view in the following language:

"'There is much misunderstanding in this country regarding the duty of the State in relation to the health of the people. It does not consist

in discriminating between schools or systems of medicine, but in requiring without prejudice or partiality of all who seek a license to practice for gain on the lives of fellow beings a minimum preliminary and professional training.'

"It was further pointed out that the State did not license patent lawyers, nor negligence lawyers, nor insurance lawyers, nor corporation lawyers, but lawyers. 'Why,' they asked, 'should the State license allopathic doctors, eclectic doctors, water doctors, massage doctors, bone setting doctors? Why should the State not require every man to be a doctor first, and let him practice afterwards any method of healing that his judgment approved?'

"These arguments prevailed with the Legislature by a vote almost unanimous, and the present law is the enactment by statute of this scientific theory of the healing art.

"The specific provisions by which these results are obtained are as follows:

"(a) Medicine is defined as the practice of the healing art by any means or methods whether with or without the use of drugs.

"Section 1. Subdivision 7.

"(b) The separate boards of medical examiners (now appointed upon the nomination of the three medical societies, representing the three most important schools of medicine) are abolished, and in their stead is created a single board, appointed solely by the Regents.

"Section 3.

"(c) The subjects upon which applicants are examined are confined to those subjects in which medicine is an exact science as outlined above. As to systems of therapeutics, the State entrust these matters to the several medical schools whose educational facilities are under the jurisdiction of the Board of Regents, and their thoroughness thereby guaranteed. When the applicant has passed successfully an examination in these fundamental subjects, he is then at liberty to practice any system of healing from osteopathy to allopathy, according to the dictates of his reasoning powers and the scope of his education.

"Section 8.

Certain Miscellaneous Provisions Considered.

"The sections referred to in the foregoing pages indicate the salient points in the bill whereby the State endeavors to establish the principle that it will not acknowledge nor discriminate any sect, school, creed or pathy in medicine.

"But there are other provisions of the bill of vast importance to the community in protecting itself against the unlicensed quack or the physician who though legally a physician is morally a danger to the State.

"First: Under the laws of the State a lawyer who is guilty of acting in an unprofessional or criminal manner may be disbarred from the further practice of his profession. Under the old medical law this was not true of the doctor. Under the present act the revocation of a physician's license was next to an impossibility unless the physician had been convicted of a felony. This bill provides for the revocation of a physi-

cian's license (after a hearing upon the charges by the Board of Regents), who is guilty of unprofessional or criminal conduct. This provision is a wise one by reason of the fact that there are to-day in this State (especially in a city like New York), a great many men who have a license to practice medicine that are not fit persons to exercise this privilege. To illustrate: the physician who has degraded himself by engaging in abortion practices, one who is a drug fiend or one who has lost all respect for the profession and simply uses his license as a trap by which to obtain money from his unfortunate patients. The provisions of the law on this subject are almost identical with the provision for the disbarment of lawyers.

"*Second:* The bill vests the Regents with the right of inquiry into the identity of any man claiming to possess a license to practice medicine. This is wise by reason of the fact that there has been no new registration in this State since 1880. Since that time a great many physicians have died and to-day there are a great many criminals practicing in this State by means of dead men's diplomas.

"*Third:* Under section 14 of the bill it is provided that the persons therein enumerated shall not be amendable to this act. These exemptions include all people formerly exempt by previous medical acts and in addition thereto it exempts those furnishing medical assistance in cases of emergency, the domestic administration of household remedies and the practice of the religious tenets of any church.

"*Fourth:* As was stated in the hearing before the Legislature the medical quack and charlatan is one of the shrewdest criminals known to the law, and because of his shrewdness it has been necessary from time to time to add new provisions to the law in order that he might not escape the thorough meaning of the law through some technicality. In substance section 15 supplied certain deficiencies in the penal provisions of the law as it existed. It says in substance that a license to practice medicine in the State of New York is a personal privilege which cannot be delegated or assumed by another and that before a person can be licensed to practice medicine or before a person can practice medicine in this State that he must possess all the requirements which in the judgment of the Legislature and the Courts are necessary for a person to have before he practices medicine.

Importance of the Definition of the Practice of Medicine.

"In the case of the People vs. E. Burton Allcutt, decided by the Appellate Division of the Supreme Court, First Department, in February (reprinted in the Law Journal with editorial February 15, 1907), the Court points out how necessary it is for the protection of the State to declare any man a physician who diagnoses and undertakes to treat disease by any means or method. And it will clearly be seen that the Unity Bill is a statutory enactment of certain principles that the Court holds are vital for the protection of the public health. The absence of a statutory definition of the practice of medicine has made it necessary for the courts, even in civil cases, to make one of their own, as will be seen by the charge of the Court in the case of Mee vs. Medical Society.

"The law is in strict accord with the progressive tendency of modern laws on this subject.

"There is nothing revolutionary in the Unity Bill, nor any too radical departure from present laws.

Conclusion

"The fact that this bill, by common consent, is familiarly known as the 'Medical Unity Bill,' is significant of its purpose to bring all medical men to a uniform high standard of training and education.

"It puts medicine, the noblest of the professions, on an exalted plane of usefulness and honor, wiping out the petty jealousies of 'sect' and 'ism,' and inviting into its rank only those men of scientific attainments whose qualifications are vouched for by a State Board, under the supervision of the Regents.

"Executive approval of this bill has marked the end of ten years of struggle between men whose time and talents would otherwise have been free to battle against disease and death.

"That the bill affects vitally the whole State, and that it is generally approved by the people and the press of the State of New York is evident from the editorials of the lay papers throughout the length and breadth of the State."

The above report on the Medical Unity Bill as drafted in a memorandum by Sturcke and Andrews, Counsel of the Medical Society of the County of New York, Counsel of the Medical Society of the County of Kings, was submitted by Dr. ARTHUR G. ROOT, Chairman of the Standing Committee on Legislation.

Dr. MACFARLANE moved the acceptance of the report and that the thanks of the Society be tendered Dr. ROOT for his earnest and energetic services.

Seconded by Dr. WILTSE. Carried.

SPECIAL COMMITTEES.

In the absence of the Chairman, Dr. D. V. O'LEARY, JR., who was not yet present, Dr. HACKER presented the following report of the committee appointed by the Society to consider the Disposal of the Garbage and Ashes of the City of Albany.

Final Report of Committee Appointed to Investigate the Question of the Removal of Garbage and Ashes by the City Government.

Mr. President.—The committee respectfully submits the following report:

Shortly after the adoption of the first report by the Society, his Honor the Mayor was interviewed by the committee. His Honor did not encourage us in our effort to have the city immediately adopt some method whereby all garbage should be gathered. He preferred to wait until the proposed intercepting sewer was completed, when garbage could be properly and economically disposed of. His Honor did not agree with us that ashes should be removed by the city. He believed the present method best.

The committee sent the following communication to the Board of Aldermen which was received and ordered to be printed:

To the Honorable Board of Aldermen of the City of Albany, N. Y.:

Gentlemen.—At the last regular meeting of the Albany County Medical Society the following resolution was reported and adopted: "Resolved, That the most important sanitary need in the city of Albany is that all garbage and ashes be removed from the home by the city, or under the supervision of the city government." It was further resolved, That the secretary be instructed to send a copy of this resolution to the Mayor and Common Council.

A committee consisting of the undersigned was appointed to take entire charge of the matter, and instructed to bring it to your attention. This committee interviewed his Honor the Mayor who informed us that when the proposed intercepting sewer is completed that all garbage will be properly disposed of. His Honor thought that the city should not go to to the expense of building a plant for the disposal of garbage, when it could be economically and properly disposed of by means of the above mentioned sewer. The plan was explained to us and we believe it to be a splendid and economical method. However some temporary method should be devised for immediate relief as the intercepting sewer cannot be completed for two or more years. We would, therefore, suggest that a city ordinance be enacted licensing all scavengers. That each man be given a certain district, and that it be a misdemeanor for any scavenger to refuse any garbage that is offered to him for collection in his district. Mention is made of the removal of ashes. From a sanitary standpoint removal of ashes is imperative, in our judgment. From a business standpoint we believe that a great saving to the householder would be furnished.

Representing the Albany County Medical Society, the committee respectfully submit this resolution to the Honorable Board of Aldermen of the City of Albany, N. Y., for their consideration.

Dated Albany, N. Y., May 6, 1907.

The Alderman representing the 18th ward, Mr. Sanford, gave notice of an ordinance embodying the points mentioned in the communication. The proposed ordinance is to be submitted to the Common Council at the next meeting May 20, 1907, when it will be voted upon. We feel certain that the proposed ordinance will be passed and become a law.

The committee feels that their work has not been in vain and that they have accomplished their purpose. We wish to give our thanks to Dr. Curtis for the good advice and assistance so kindly given to us.

DANIEL O'LEARY, JR., Chairman,
CHRISTIAN G. HACKER,
T. W. JENKINS,

Committee.

Dated Albany N. Y., May 8, 1907.

Dr. NEUMAN moved that the report be received and the committee discharged with the thanks of the Society.

Duly seconded and carried.

Dr. ROONEY, in the absence of the Chairman, Dr. WARD, of the committee appointed by the Society to present the matter of medical inspection of school children to the proper authorities reported progress and asked for further time in order to make a more complete and detailed report.

Dr. H. BENDELL expressed himself much in favor of this movement. He called attention to the fact that it was a mistake to first present this matter to the Mayor and City Government. It should first be presented to the Board of Health and then to the School Board before presentation to the city authorities. It is a matter, the importance of which cannot be overestimated and should have the support of every medical body irrespective of locality. It should be a national as well as a local movement. Many children are obliged to leave the school each year owing to physical imperfections, and it is estimated that at least eighty per cent. do so because of defective sight or impaired hearing. It is said that in Germany of those suffering from myopia sixty per cent. acquire the same during school life. Fortunately, in this country, it is estimated at only twenty per cent., but even that is far too great a percentage. Twenty-two State Medical Societies have thus far taken cognizance of the matter, and three states, Massachusetts, Connecticut and Vermont, have passed statutes requiring teachers in the public schools to note any ocular or oral defect, and report such condition when found to parents or guardian. Am sorry to say that New York State has no such law; neither has the New York State Medical Society taken action regarding this important matter. The committee should be continued and encouraged.

Dr. GUTMANN called attention to the fact that the nature of the resolution permitted the committee to bring the matter before the proper authorities.

The committee was thereupon continued.

ELECTION OF MEMBERS.

According to Chapter II, Section 4, By-laws of the Albany County Medical Society, the name of Dr. FREDERICK C. CONWAY, Albany, N. Y., was recommended by the Censors for election.

Dr. ROONEY moved that the Secretary be authorized to cast one ballot for the candidate recommended. Duly seconded. Unanimous consent having been granted, the Secretary did as directed.

The President thereupon declared Dr. FREDERICK C. CONWAY elected a member of the Society.

PRESIDENT'S ADDRESS.

Dr. H. BENDELL being called to the chair, Dr. GEO. GUSTAVE LEMPE, President of the Society, read the following address:

"Gentlemen:—As your President, the duty devolves upon me to address you upon some subject more or less pertinent to the science we represent.

But as you have been treated to a rather plethoric diet of strictly medical subjects, I shall take the liberty of deviating from the usual course this evening.

"This society has finished its first century of existence and is entering upon its second, the end of which none of us here, in all probability, shall live to see. I shall therefore, with your kind indulgence, give a very brief résumé of the history of this Society, the Medical Society of the County of Albany.

"This Society is perhaps the oldest incorporated medical society in the State, having been organized almost immediately after passage by the Legislature of a statute for the purpose in 1806, six months before the New York State Society was organized. In membership it ranks to-day fifth among the county societies of the whole State, being preceded only by New York, Kings, Erie and Monroe counties.

"On Thursday, July 29, 1806, ten doctors met in the city of Albany for the purpose of forming a medical society. It was resolved on that date that this Society be known by the name of the Medical Society of the County of Albany. It was further resolved that the Board of Censors consist of five members. A committee was appointed to draft a code of by-laws, the framework of which is substantially the same as to-day. The obligations of the Censors were grave and responsible, inasmuch as they examined the candidate for license to practice medicine, in physic and in surgery, and if they found him qualified granted him a certificate to that effect. This certificate entitled him to a diploma of this Society, on application to the president.

"Every person admitted to the practice of physic and surgery was obliged to sign the following declaration:

"'I, J. S., do solemnly swear that I will honestly, virtuously and judiciously conduct myself in the practice of Physic and Surgery, and that I will with fidelity and honor do everything in my power for the benefit of the sick committed to my charge.'

"This declaration so signed was preserved in the archives of the Society.

"The code of ethics of the American Medical Association was adopted by the Albany County Medical Society in 1876. A system of ethics for the guidance of the physicians, virtually like those of the American Medical Association, had been adopted as early as 1824.

"In February, 1880, the first number of the MEDICAL ANNALS appeared under the title of THE MEDICAL ANNALS, A JOURNAL OF THE MEDICAL SOCIETY OF THE COUNTY OF ALBANY. Three volumes of the Transactions of the Medical Society of the County of Albany had appeared before this: in 1864, the transactions from the beginning, 1806, to 1851 were published. 'This, the first volume, owed its existence to the indomitable literary worker and delver into the somewhat misty past, Dr. Sylvester Willard. In biography it is especially rich, and the material there collected could only have been gathered by a lover of the work.'—(Dr. F. C. Curtis). Six years later the transactions of this Society from 1851 to 1870 were published in one volume. In 1883 a third volume was published, bringing the transactions of the Society down to 1880, together with the

papers read before the Society. This Society is perhaps the only county society which has perpetuated in print its history from its organization down through an existence of 101 years, with biographies of 165 of its members.

"In the year 1880 we had here in Albany, besides the County Society, The Academy of Medicine, with a membership of sixty-four. For a number of years (the time of the interregnum, if I might call it so) no other large recognized societies were in existence. To-day we have at least four able-bodied subsidiary societies contributing to the welfare and upbuilding of this the parent Society.

"In *primis*, gentlemen, we have the Society *par excellence*, The Medical Whist Club, the *haute noblesse* of them all. Next in order of age comes the Journal Club, to whose efforts and to whose energetic, earnest and painstaking work the medical paper representing this Society, THE ALBANY ANNALS, first made for itself a name both here and abroad, and, incidentally, for the medical men of Albany. Then, gentlemen, we find here the Bender Laboratory Club, where excellent work is being done by its members in scientific research and the search after truth and *positive* facts, which, as we know, are so uncertain and elusive, even when sought for with a microscope. Nature is very shy and slow in giving up her secrets to mere man, in spite of modern energy and the most modern apparatus. And, lastly, gentlemen, what shall I say of our Nursery and Training School for future eminent and celebrated practitioners, clinicians and specialists, this banding together of young men in the pursuit of knowledge and the investigation and testing of newer methods which *sine dubio* will redound to the credit of themselves and the Albany County Medical Society, gentlemen, the Clinical Club. All these societies have encouraged and nobly supported your president, and have aided him in making the meetings of this session successful ones. To the individual members who have so loyally helped and stood by him, grateful recognition is hereby extended.

"As professional men in the full discharge of professional duties we are called upon to keep pace with the most advanced ideas of the times, and in addition to the knowledge of the means of cure, give due heed to all that is developed in the way of preventing disease. The practitioner, the clinician, the surgeon and the laboratory worker, all sustain a mutual relation; they are fellow students and fellow workers. Each has something to teach the other; each has something to learn. The clinical fact arrived at by wise and close determination may prove the solution of some difficult problem, and the deductions of the scientific investigator help to make the diagnosis positive. The student to-day enters upon the study of a profession which has changed in a great many respects in the last few years only. In all subdivisions of the study of medicine there has been advancement taxing the energies of the busy practitioner to keep pace with the changes; the growth of knowledge has been greater than the average increase in degree of mental power. Yet it is necessary that we should attain a sufficient knowledge of other departments to enable us to meet the demands of the practical life and give evidence of professional zeal in accord with the spirit of the day.

"As a profession, gentlemen, we have not heretofore made Albany such a center of influence as we could have done. Personal interest has been allowed to usurp the place of professional advancement; to minor issues and trifling affairs time has been given which might have been given to the elevating of medical influences in this city and county. Let us unite, therefore, in one great effort to make this Society widely known outside the borders of this county; let it be quoted as the most energetic, progressive and most scientific society in the State of New York."

Dr. CURTIS moved that the thanks of the Society be extended to the President for his most interesting address, and that a copy of the same be requested for publication, and complimented the president upon his successful administration of his office during the past year.

Seconded by Dr. STILLMAN, who also spoke of the work which had been accomplished. Dr. MACFARLANE likewise expressed the same sentiments. The motion was then put and unanimously carried.

Dr. H. BENDELL, in relinquishing the chair, said that he considered the last year one of the most successful in the history of the Society.

ELECTION OF OFFICERS.

Nominations being in order, Dr. H. BENDELL presented the name of Dr. GEORGE GUSTAVE LEMPE for nomination for the office of president for the ensuing year. He said he did so at the request of many members of the Society who wished thus to express their appreciation of the work of the retiring President in organizing and administering the affairs during the past twelve months.

Dr. NEUMAN seconded the motion, and there being no other nominations made for this office, moved that the Secretary be instructed to cast one ballot for Dr. GEO. GUSTAVE LEMPE for the office of President.

Dr. H. BENDELL was again called to the chair.

Before the question was put Dr. COOK said that while he could say nothing that could detract from the good work that had been done in the year just passed, he believed that other members should also share in the praise for the work accomplished, and did not believe that it was wise or advisable in a society as large as that of the Albany County Medical Society to re-elect for the office of President any man, no matter how good his record had been.

Dr. NEUMAN's motion, being duly seconded, was put and unanimously carried.

Dr. BENDELL appointed Drs. STILLMAN, SHELDON and MACFARLANE as Tellers. The Secretary, as instructed, then cast one ballot for the office of President, bearing the name of Dr. GEO. GUSTAVE LEMPE.

Dr. BENDELL thereupon declared Dr. GEO. GUSTAVE LEMPE elected President of the Society for the ensuing year.

The President, in resuming the chair, thanked the members of the Society for the honor conferred upon him, assuring them of his earnest desire to serve them to the best interests of the Society.

Further election of officers was then continued, the next in order being the office of Vice-President.

Dr. MERENESS nominated Dr. FREDERICK L. CLASSEN for that office. Dr. RULISON nominated Dr. HOWARD E. LOMAX. Dr. CLASSEN withdrew in favor of Dr. LOMAX. There being no other nominations, Dr. WILTSE moved that the Secretary be instructed to cast one ballot for the office of Vice-President, bearing the name of Dr. LOMAX; duly seconded. Unanimous consent being granted, the Secretary did as instructed, and the President thereupon declared Dr. HOWARD E. LOMAX elected Vice-President of the Society for the ensuing year.

Dr. HACKER presented the name of Dr. ARTHUR J. BEDELL in nomination for Secretary. There being no other nominations, Dr. CLASSEN moved that the Secretary be instructed to cast one ballot bearing the name of Dr. ARTHUR J. BEDELL for the office of Secretary. Duly seconded, and unanimous consent having been given, the Secretary did as instructed. Thereupon the President declared Dr. ARTHUR J. BEDELL elected Secretary of the Society for the ensuing year.

Dr. WILTSE nominated Dr. WILLIAM H. GEORGE for the office of Treasurer. There being no other nominations, Dr. WILTSE moved that the Secretary be instructed to cast one ballot bearing the name of Dr. WILLIAM H. GEORGE for the office of Treasurer. Duly seconded, and unanimous consent being given, the Secretary did as instructed. Thereupon the President declared Dr. WILLIAM H. GEORGE elected Treasurer of the Society for the ensuing year.

Dr. NEUMAN placed in nomination Dr. F. C. CURTIS to serve on the Board of Censors; Dr. MITCHELL, the name of Dr. F. L. CLASSEN; Dr. CLASSEN, the name of Dr. J. H. MITCHELL; Dr. RULISON, the name of Dr. J. D. CRAIG; Dr. KEENS, the name of Dr. E. A. VANDER VEER; Dr. HACKER, the name of Dr. J. B. WASHBURNE. Nominations being closed, the Society proceeded to cast their ballots for five members to serve on the Board of Censors.

The President appointed to serve as Tellers, Drs. MACFARLANE, WILTSE and GUTMANN. The ballots having been cast and counted, the Tellers reported as follows: Dr. F. C. CURTIS received 46 votes; Dr. J. H. MITCHELL received 45 votes; Dr. F. L. CLASSEN received 45 votes; Dr. E. A. VANDER VEER received 34 votes; Dr. J. D. CRAIG received 29 votes; Dr. J. B. WASHBURNE received 25 votes; Scattering received 14 votes.

The President thereupon declared Drs. F. C. CURTIS, J. H. MITCHELL, F. L. CLASSEN, E. A. VANDER VEER and J. D. CRAIG elected as Board of Censors for the ensuing year.

UNFINISHED BUSINESS.

Dr. A. J. BLESSING, for the Auditing Committee, reported that they had examined the books of the Treasurer and found them to be correct.

Dr. HOLDING called attention to the matter of expense incurred in relation to the lunches served at meetings of the Society, and solicited subscriptions to defray this additional expense.

NEW BUSINESS.

Dr. HOLDING gave notice that at the next annual meeting an amendment to the by-laws would be introduced, changing Section 1, Chapter VII, to read "Each member shall pay annually the sum of two dollars, etc.," instead of: "Each member shall pay annually the sum of one dollar, etc."

Dr. HACKER presented the following as candidates for election to membership into the Society: Dr. W. E. DEITZ, of Berne, N. Y.; Dr. PERCIVAL W. HARRIG, of Albany, N. Y.

Referred to the usual course.

Dr. CLASSEN read the following resolutions:

"Whereas, The position of Secretary of the State Board of Medical Examiners, contemplated by the Medical Unity Bill, is to be filled by the Regents in the event of the latter bill becoming a law,

"Whereas, Dr. MAURICE J. LEWI, an ex-President of the Society, has for the past sixteen years served the State and the profession so well and so earnestly in a like capacity (Secretary of the Joint Medical Boards) therefore be it

"Resolved, That this Society earnestly recommends to the Regents that Dr. MAURICE J. LEWI be selected by them to continue his services to the cause of medical progress in the role of Secretary of the State Board of Medical Examiners, and that the Secretary be instructed to convey this resolution to the Commissioner of Education for presentation to the Honorable Board of Regents at their next succeeding meeting." And moved its adoption.

Dr. STILLMAN seconded the motion, bearing witness to Dr. MAURICE J. LEWI's long and faithful service as Secretary to the Board of Medical Examiners.

Dr. MERENESS also spoke in a similar manner in favor of the resolution. Question being called for, the resolution was unanimously adopted.

The President then read the following letter from Dr. W. S. BRISTOL:

"ALBANY, N. Y., May 5, 1907.

"Dr. GEORGE G. LEMPE, President Albany County Medical Society.:

"My dear Sir.—Will you kindly let me know what you or the members of the Albany County Medical Society think about the way affairs are conducted at 'Pavilion F'?

"I recently had a private patient in a room at the Albany Hospital. On one of my visits I was informed that she had been transferred to 'Pavilion F' and that I would not be permitted to treat her there. Why I should be deposed in such a manner against the wishes of herself and family is something I cannot understand. Is there not some way to be devised so that the members of the Albany Medical Society can treat their

patients in 'Pavilion F' the same as in other departments of the Albany Hospital?

"If you will kindly enlighten me, and bring the matter before the Society, you will greatly oblige,

"Yours fraternally,

"(Signed) WILLIAM SAMUEL BRISTOL, M. D.,
"80 South Ferry St."

Dr. STILLMAN referred to a similar experience in relation to a patient who came to the city to consult him exclusively, was under his professional care at the hospital, showed some hysterical symptoms and in order not to disturb those in the immediate vicinity of her room was transferred to Pavilion F, but she must be under the care of the specialist in charge of this pavilion. He, therefore, was obliged to remove her from the hospital in order to again assume charge of his patient. Dr. STILLMAN moved that a committee be appointed by the President to confer with the Board of Governors of the hospital in regard to this matter.

Dr. CLASSEN, in seconding the motion, said he had conversation with many along similar lines, and the consensus of opinion was that the physicians were not fairly treated in regard to this matter.

Dr. COOK arose for information as to whom was relegated the power to appoint the physician in charge of Pavilion F.

Dr. MERENESS stated that the county erected the building and the Board of Supervisors turned it over to the care of the Board of Governors of the Albany Hospital, who have the power of appointment.

Dr. GUTMANN believed that when a patient is transferred to Pavilion F it is a mental case and therefore should come under the direct care of the specialist in charge.

Question being called for, the motion was adopted.

The President appointed the following committee: Dr. W. O. STILLMAN, Dr. A. MACFARLANE, Dr. W. S. BRISTOL, Dr. F. L. CLASSEN, Dr. H. E. MERENESS, Dr. A. J. BLESSING.

The President then read the following communication from the Secretary of the Guild for the Care of the Sick.

"May 8, 1907.

"The Medical Society of the County of Albany:

"Gentlemen.—Believing that the time has come for concerted action and organized efforts on the part of physicians, nurses, charitable institutions and the general public in dealing with consumption in its various forms and stages, and acting in accordance with its custom of extending its lines of work whenever and wherever there arises a demand or a need for such extension, the Albany Guild for the Care of the Sick has established a Tuberculosis Department, having for its object the investigation and supervision of cases which properly belong to such a department and which otherwise might or might not be brought under pro-

fessional care, and the organization and maintenance of a system of teaching which shall acquaint all who come in contact with the disease, of the risks involved and the means to be taken to reduce such risks to the minimum.

"Believing that the natural and proper starting point in a work of this kind is an understanding with the physicians, individually and collectively, the Guild respectfully calls the attention of the members of the Medical Society of the County of Albany to the Tuberculosis Department, hoping that full co-operation may be established upon the lines indicated above and trusting that the physicians of our city will lend their support to the Guild in this new undertaking as they have hitherto done in other directions.

"Any and all cases of tuberculosis reported to the Guild will receive the best possible attention, coupled with advice and instruction calculated to prevent as well as to relieve suffering. In other words, the nurses will care for the sick, teaching them to help themselves to improved conditions through proper diet, fresh air and reasonable exercise and to do their part in preventing the spread of the disease through care of the sputum, etc. Besides all this they will impress upon the families and friends of tuberculosis patients the advantage, the desirability, the *necessity* for constant care and watchfulness in regard to cleanliness, good food and pure air in the homes. Thus, those suffering from consumption will be greatly relieved and benefited while those around them may actually be saved from the disease itself by a system of instruction having that for its particular object.

"The Guild bespeaks the assistance and co-operation of your honorable body in this line of work and will appreciate advice or suggestions as to the best way of discovering and reaching the obscure cases, all the more menacing because obscure. It is hoped that at no distant day, through the medium of such co-operation, all cases of tuberculosis may be brought under supervision in one way or another.

"Respectfully,

"CLARA M. WINSHIP,

"Corresponding Secretary."

Dr. MACFARLANE moved that the communication be received, that the Secretary of the Society acknowledge its acceptance, thanking the Guild for their interest in this work and assuring them of our hearty support and co-operation.

Dr. CURTIS seconded the motion, which was then put and carried.

Dr. MERENESS moved that a committee of five be appointed by the President to ascertain the present condition of tuberculosis as it exists in the city of Albany to-day, and report to the Society at its next meeting, with recommendations. Being duly seconded the question was put and carried.

The President thereupon appointed the following committee: Dr. H. E. MERENESS, Dr. S. B. WARD, Dr. T. P. BAILEY, Dr. T. L. CARROLL, Dr. F. L. CLASSEN.

Dr. CURTIS called attention of the members to a typographical error in the printed copy of the By-laws, Section 2 and Chapter 5, which should state that the delegates to the District Branch shall be elected at the semi-annual meeting instead of the annual meeting as it now reads. The members were directed to notice this error in the By-laws and the correct reading, and be governed accordingly.

There being no further business to come before the meeting, a motion to adjourn was seconded and carried.

The Society adjourned at 10:45 P. M.

C. H. MOORE,

Secretary pro tem.

GEO. GUSTAVE LEMPE, *President.*

Medical News

Edited by Arthur J. Bedell, M. D.

THE ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR JUNE, 1907. Number of new cases, 114; *Classified as follows:* Dispensary patients receiving home care, 2; district cases reported by health physicians, 5; charity cases reported by other physicians, 66; moderate income patients, 41; old cases still under treatment, 60; total number of patients under nursing care during the month, 174. *Classification of diseases* (new cases): Medical, 29; surgical, 6; gynecological, 1; obstetrical, 40 mothers and 37 infants under professional care; skin, 1; one contagious disease in medical list; transferred to hospital, 5; deaths, 4.

Special Obstetrical Department—Number of obstetricians in charge of cases, 2; attending obstetricians, 2; medical student in attendance, 1; Guild nurses, 6; patients, 2; number of visits by attending obstetricians, 2; by the medical students, 21; by the Guild nurses, 41; total number visits for this department, 64.

Visits of Guild Nurses (all departments): Number of visits with nursing treatment, 1,187; for professional supervision of convalescents, 174; total number of visits, 1,361. Five graduate nurses and 4 assistant nurses were on duty. Cases were reported to the Guild by 2 of the health physicians and by 29 other physicians.

ALBANY HOSPITAL—Dr. H. C. Goodwin has started as superintendent of the Albany Hospital. The doctor is a graduate of Dartmouth Medical College and comes well prepared for his difficult task. Following graduation he was in the Tewksbury, Mass., State Hospital for three and one-half years, where he had an extensive general training. He comes direct from the State Hospital for the Insane at Concord, N. H., where he was assistant superintendent.

UNION COLLEGE—Dr. A. V. V. Raymond has resigned from the presidency of the college to accept the pulpit of a large church in Buffalo, N. Y. As yet his successor has not been announced, but the Reverend Dr. George Alexander will assume direction of the college temporarily.

COLLEGE CATALOGUE—The 1907-'08 announcement of the college has appeared in the neat form used for some years. Important changes include

the addition of three new members to the faculty: Dr. Andrew MacFarlane, Professor of Physical Diagnosis and Medical Jurisprudence; Dr. Arthur G. Root, Professor of Diseases of the Nose and Throat, and Dr. Leo H. Neuman, Professor of Gastro-Enteric Diseases and Clinical Professor of Theory and Practice of Medicine. The corps of lecturers has been increased: Dr. H. E. Lomax and Dr. Geo. G. Lempe, Anatomy; Dr. LaSalle Archambault, Neurology; Dr. G. E. Beilby, Histology; Dr. A. F. Holding, Radiography, and Mr. W. A. Larkin, Inorganic Chemistry. Additional instructors include Dr. B. K. De Voe, Anatomy; Dr. E. E. Hinman, Nose and Throat; Dr. J. H. Gutmann, Surgery and Obstetrics; Dr. J. N. Vander Veer, Genito-Urinary Surgery; Dr. Malcolm Douglass, Histology; Dr. C. W. L. Hacker, Surgical Pathology; Dr. C. B. Hawn, Pathology and Bacteriology; Dr. H. P. Sawyer, Pathology and Bacteriology; Dr. T. F. Doescher, Pathology and Bacteriology, and Dr. Erastus Corning, Theory and Practice.

The next college year starts Tuesday, September 24th, and commencement is on Tuesday, May 19th, making the course of instruction two weeks longer than last year.

COLLEGE OF PHARMACY—The annual announcement of the 27th session shows an increased enrollment with added facilities for instruction. Dr. Spencer L. Dawes has been appointed instructor in Microscopy and Pharmacogrosy.

STATE BOARD OF MEDICAL EXAMINERS—The State Board of Medical Examiners met June 25th and effected temporary organization. The following officers were elected: President, Dr. William Warren Potter, Buffalo, Vice-President, Dr. Wm. S. Searle, Brooklyn; Question Committee, Drs. Lee H. Smith, Buffalo; Wm. W. Potter, Buffalo; Frank W. Adriance, Elmira, and R. H. Williams, Rochester. The topics of Obstetrics and Gynecology were temporarily assigned to Dr. Potter; Pathology, Dr. Searle; Bacteriology, Dr. Adriance; Anatomy to Dr. Wm. S. Ely, Rochester; Hygiene and Sanitation to Dr. Engene Beach, Gloversville; Physiology to Dr. R. H. Williams; Chemistry to Dr. F. S. Farnsworth, Plattsburg, and Surgery to Dr. F. M. Crandall, New York City.

The Regents have appointed Dr. Maurice J. Lewi (A. M. C., 1877) of New York City, the present secretary of the joint board, as secretary of the new board.

AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY—The following resolutions were adopted at the last meeting of the House of Delegates:

Whereas, The Council on Pharmacy and Chemistry, after examining many hundreds of preparations, has officially announced its approval of a large number of such preparations; and

Whereas, We believe that the editors of many medical journals in this country, both official organs and State associations and privately owned journals, are desirous of co-operating in the work of freeing the medical profession from the nostrum control; therefore, be it

Resolved, That this Association most earnestly requests all medical journals to refuse to aid in promoting the sale of preparations which have

not been approved by the Council, by refusing advertising space to such preparations; and be it further

Resolved, That we most earnestly request the moral and financial support of our members for those medical journals, whether privately owned or controlled by medical organizations, which disregard commercialism and stand firm for honest and right dealing, thus sustaining the Council in its greatest work for the medical profession.

THE INTERSTATE MEDICAL JOURNAL (ST. LOUIS) announces the purchase of the *St. Louis Courier of Medicine*, one of the oldest medical journals in the West, and its consolidation with the *Interstate* on July 1st. The *St. Louis Courier of Medicine* was established in 1879 by an association of prominent St. Louis physicians. It has always commanded a large following throughout the West and South, and held the respect and esteem of the entire profession of this country. This merger removes from the field an old and highly esteemed contemporary, and its consolidation with the *Interstate* adds strength and prestige to that periodical. This is the fourth medical journal that has been purchased and absorbed by the *Interstate* during the past few years.

A NOVEL USE FOR OLD FERRY BOATS—The old Staten Island ferry boat "Southfield" has been cleaned up and moored at the dock at the foot of West 16th Street on the North River, where it is now being used as a day camp for consumptives. With a trained nurse in charge, a regular visiting staff of physicians, an abundance of milk and eggs and steamer chairs and hammocks in which to sit out of doors and watch the passing river craft, fifty men and women are keeping cool and getting back their health and strength.

The boat was put at the disposal of the Committee on the Prevention of Tuberculosis of the Charity Organization Society by Commissioner John A. Bensel of the Department of Docks and Ferries. Since the Department has been operating its new boats on the Staten Island ferry the "Southfield" has not been running and the Commissioner therefore was able to give his hearty support to the plan that was put before him to permit the boat to be used as a day camp under the strict medical supervision of the Tuberculosis Committee and at the Committee's expense. The boat was thoroughly cleaned, water closets, a stove and an ice chest were put in, several dozen steamer chairs and a few cots were bought, a trained nurse engaged and then the camp was ready for patients. These patients are sent to the boat after being examined and passed by the physicians in charge of the Associated Tuberculosis Dispensaries to which any one desiring this treatment may go for this purpose. After examination, if the applicant proves to be able to be up and around and is not running a temperature, a card of admission to the boat is given and thereafter each day the patient goes through the regular routine beginning with the taking of temperatures and weighing at nine o'clock in the morning and ending at five o'clock in the afternoon when all go to their homes except a few men patients who stay all night. Fresh milk and eggs are given in abundance, each patient taking from three to eight eggs and from three to eight glasses of milk daily, other food, except

bread and butter, hot tea or coffee and a cooked egg, which are given out at noon, being brought by the patients themselves. Once each week the Committee in charge meets the boat, the medical members of this Committee serving each two weeks in turn as visiting physicians. In speaking about the boat a member of the Committee said, "A good many people realize now that fresh air and medical oversight are needed to cure tuberculosis, but in a long, narrow, congested place like the island of Manhattan how is this fresh air to be had? There are not parks enough to go round and daily trips to the great open spaces in the Bronx are out of the question for the ordinary sick consumptive who can't take the time and the money to do this. We looked into this matter carefully, some time ago, several good sites having been very generously offered to us, but we considered them too far from our base of supply, the crowded tenements where tuberculosis is bred. Then some old buildings that the city had condemned were about to be put at our disposal, but we could not get any assurance but what we might be put out right after putting in improvements extensive enough to be expensive to us with our limited resources and so we had to give up that idea. We then thought of the water front and found a mighty helpful ally in Commissioner Bensel and it was due to his interest and broad view of things that we now have our camp in full swing aboard the good boat 'Southfield.' It was something of a job to clean her up and fix things as we needed them, but it was well worth while. If any one doubts it, let him go down and see for himself. The patients are putting on pounds and the color is coming back in whitened cheeks in a most wonderful manner. Now and then a good friend sends us some fruit, magazines and flowers, and with these and the extra diet and good fresh air our patients are getting along famously. There's an idea in all this, too, that's worth giving a good deal of thought to. With all our talk about the impossibility of getting fresh air in our tenement districts, and there is no doubt but what that is all too true, have we not the means ready at hand in our large water front or on our own bay to provide resting places where our 40,000 consumptives and our thousands of others needing fresh air can get this absolute essential to cure?"

PERSONALS—DR. H. L. K. SHAW (A. M. C., 1896) has been appointed by Governor Hughes, manager of the Hudson River Training School for Girls at Hudson. Dr. Shaw was elected second vice-president of the American Pediatric Society at its last meeting held in Washington, D. C., May, 1907.

—DR. WILLIS G. MACDONALD sailed for Europe July 2d for a few months observation. He will travel through Germany, taking the baths of that country. He sailed with Dr. Albert Kocher of Berne, Switzerland.

—DR. A. H. TRAVER (A. M. C., 1897) returned July 17th from an extended tour of Europe.

—DR. JAMES MALONEY (A. M. C., 1907) is interne at the Willard State Hospital, Willard, N. Y.

—DR. ALBERT VANDER VEER delivered the oration on Surgery at the New Jersey State Medical Society meeting, Long Branch, N. J., June 27th.

In Memoriam

HENRY H. CLAPSADDLE, M. D.

Henry H. Clapsaddle, M. D., died at his home in Toddsville, N. Y., June 29, 1907, after a short sickness brought on by overwork. He was born in Columbia, Herkimer county, N. Y., in January, 1842. In early manhood he taught school, later he studied medicine and graduated from the Albany Medical College in 1872. He at once located at Toddsville, and ever since then has practiced his chosen profession with devotion and success.

He at once united with the Otsego County Medical Society, and continued a member until his death he was also a member of the State Society. He was married to Miss Mary House in 1872. She survives, also three children, one son and two daughters.

Dr. Clapsaddle was a member of Otsego Lodge No. 138, F. & A. M. He was a man of integrity and was devoted to his family, patients and the village where he so long resided. He was a progressive and public-spirited citizen and did what he could for the betterment of the world.

H. W. BOORN.

LEWIS W. HODGKINS, M. D.

Dr. Lewis W. Hodgkins, of the class of 1856 of the Albany Medical College, died at Ellsworth, Me., June 11, 1907. Dr. Hodgkins was surgeon of the Sixty-sixth Indiana Volunteer Infantry in the Civil War, and afterward was acting assistant surgeon in the United States Marine Hospital Service.

HENRY L. FURBECK, M. D.

Dr. Henry L. Furbeck, of the class of 1881 of the Albany Medical College, died on July 11, 1907, after a long illness. After graduation Dr. Furbeck spent a year with Dr. Wheeler at Farmer, N. Y., then located at Little Falls, N. Y. In 1888 he moved to St. Johnsville, N. Y., and engaged in practice and in the drug business. He was a member of the Medical Society of the County of Montgomery and also of the State Society. Dr. Furbeck never married.

JAMES B. KENNAH, M. D.

Dr. James B. Kennah died at his home in Saratoga after a long illness on July 11, 1907. Dr. Kennah began the practice of medicine in Albany, after his graduation in 1889, but in November of last year removed to Saratoga Springs in the hope of recovering his health. His office was on Central avenue, above Perry street. He was active in Democratic politics and for a time was city physician. He was a graduate of Manhattan College, 1885, and in 1891 was given the degree of M. A. for research in scientific lines. He was a member of the Alumni Association of the C. B. A., Alumni of Manhattan College, Albany College of Pharmacy,

Albany Medical College, Anaware Tribe 393 of Red Men, Albany Fish and Game Club and of several Democratic organizations. Dr. Kennah was a man of pleasing personality. He is survived by his father and mother, one brother, John Kennah, of this city, two sisters, Mrs. John H. Morris and Mrs. E. L. Fitz Gerald, both of Saratoga.

GEORGE ROWE, M. D.

Dr. George Rowe was born at Oak Hill, Schoharie county, N. Y., January 9, 1839. His early education was obtained at the Schoharie Academy. After graduating from this institution he acted as clerk in a drug store and read medicine with Dr. Hill of Quaker street, Schenectady county, for a period when he entered the Albany Medical College and graduated with the class of 1864. His medical course was supplemented by six months active service in the Nashville, Tenn., Hospital. In 1864 he married Miss Rachel Stewart of Brahman's Corners, Schenectady county, and practiced medicine at this place until 1882 when he moved to Gloversville, and combined the practice of medicine with an active interest in a drug store. His death on May 5, 1907, of apoplexy, removed one of the oldest members of the alumni association.

GEORGE LENZ.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS

Lectures to General Practitioners on the Diseases of the Stomach and Intestines. With an account of their relations to other diseases and of the most recent methods applicable to the diagnosis and treatment of them in general also; "The Gastro-Intestinal Clinic," in which all such diseases are separately considered. By BOARDMAN REED, M. D., Member of the American Medical Association, American Climatological Association, American Academy of Medicine, American Electro-Therapeutic Association; Foreign Member of the French Société D'Electrothérapie; Late Professor of Diseases of the Gastro-Intestinal Tract, Hygiene and Climatology in the Department of Medicine of Temple College; Late Physician-in-Chief to the Samaritan Hospital, Philadelphia, etc. Illustrated. Second Edition, New York, E. B. Treat & Company, 241-243 West 23rd street, 1907.

This is a book of nine hundred and eighty-two pages intended especially for the general practitioner to aid him in the diagnosis and treatment of diseases of the gastro-intestinal tract. The anatomy and physiology of digestion, absorption and defecation are considered in the first part. The second part describes methods of physical examination of the patient, the determination of the size and position of the stomach and intestines and the chemical examination of the stomach contents, urine and feces. It ends with a chapter which is of special interest

and value—a symptomatic guide to diagnosis. The third part, "Methods of Treatment" is unusually full and complete, covering about a hundred and eighty pages. It includes discussions of hygiene, prophylaxis, dieto-therapy, feeding by other routes than by the mouth, the value of exercise and masage, electricity, vibration and other mechanical treatment, Lavage, the intra-gastric spray and the use of mineral waters and of drugs. In part four, "The Gastro-Intestinal Clinic," the different diseases of the stomach and intestine are considered in detail.

This book will undoubtedly prove of great practical value to physicians, containing as it does, in one volume, the latest methods of diagnosis and treatment both of the diseases of the stomach and of the intestine.

A. T. L.

The Practical Medicine Series. Comprising ten volumes on the year's progress in medicine and surgery, under the general editorial charge of GUSTAVUS P. HEAD, M. D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. *Volume I, General Medicine*, edited by FRANK BILLINGS, M. S., M. D., head of Medical Department and Dean of the Faculty of Rush Medical College, Chicago, and J. H. SALISBURY, A. M., M. D., Professor of Medicine, Chicago Clinical School. Series 1907. Chicago: The Year Book Publishers, 40 Dearborn street.

An illustrated review in 357 pages of the recent literature dealing with diseases of the blood and blood forming organs, the heart, blood vessels, the kidneys, ductless glands, respiratory organs and some of the general infectious diseases.

The American Pocket Medical Dictionary. Edited by W. A. NEWMAN DORLAND, M. D., editor "The American Illustrated Medical Dictionary." Fifth Revised Edition. 32mo of 574 pages. Philadelphia and London: W. B. Saunders Company, 1906. Flexible morocco, gold edges, \$1.00 net; thumb indexed, \$1.25 net.

This, a convenient little volume well printed and bound in flexible covers, contains brief definitions of all the important words used in medicine and the kindred sciences, including many of recent coinage. In it are inserted also 60 tables in which important correlated facts are grouped. Although it does not replace the larger dictionary it is of great value for ready reference.

A Text-Book of Embryology. By JOHN C. HEISLER, M. D., Professor of Anatomy in the Medico-Chirurgical College of Philadelphia. Third Revised Edition. Octavo volume of 432 pages, with 212 illustrations, 32 of them in colors. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$3.00 net; half morocco, \$4.25 net.

The object of this book is to present the subject to the student in a concise manner and without the minuteness of detail so characteristic of

the larger works on the subject which so often confuse one not thoroughly familiar with the subject. The author has given us a connected story of human development and at the same time each chapter is nearly complete in itself in order that the book may be convenient for reference. The work fulfills the purposes for which it was written and can be recommended both to medical students and others interested in the subject.

J. A. S.

Conservative Gynecology and Electro-Therapeutics. A Practical Treatise on the Diseases of Women and their Treatment by Electricity. By G. BETTON MASSEY, M. D. Fifth Revised Edition. Illustrated with 12 Original, Full-page, Chromo-lithographic Plates and 15 Full-page Half-tone Plates of Photographs taken from Nature and Numerous Engravings in the Text. Philadelphia: F. A. Davis Company, 1906.

In this work the author described the methods used by him in the treatment, of the various pelvic disorders of women, by means of electricity. The results of these methods are also given and in many instances illustrated by drawings or photographs.

There is no department of medicine where greater conservatism should be exercised than in gynecology and this conservatism is more frequently violated than in any other class of cases. Not only may many of these cases recover with the use of electricity but many will also recover or live just as useful lives without any treatment whatsoever directed to the pelvic condition. A lacerated cervix, in itself, rarely needs any local treatment (operative or medicinal), a large percentage of pelvic inflammatory conditions will recover without treatment and leave the patient in better condition than after an operation. Many women have cystic ovaries, small myomata and uterine displacements without any symptoms and without their knowledge. Many others realize that these conditions are present only because some physician has told them. These are the cases which some of us believe have been most benefited by the use of electricity but which would often do better if let alone as far as their pelvic condition is concerned. Those of us who have seen inoperable cases of cancer of the uterus which had been treated by electricity for months and who have found myomata, which should be removed, rendered almost inoperable as the result of adhesions arising from the Apostoli treatment, naturally have very little sympathy with the use of electricity in these cases.

The book certainly is a most eloquent plea for greater conservatism and possibly the methods put forth are of greater therapeutic value than some of us think, for electricity has its use as well as its abuse in all departments of medicine.

For those who are interested in electricity in this field, this book may be of value, and the presence of a fifth edition indicates that it has been appreciated.

J. A. S.

Modern Clinical Medicine; Diseases of the Digestive Tract. Edited by FRANK BILLINGS, M. D., Professor of Medicine, Univ. of Chicago, and Professor of Medicine and Dean of the Faculty of Rush Medical College. An authorized translation from "Die Deutsche Klinik" under the general editorial supervision of Julius L. Salinger, M. D., with 45 illustrations in the text. New York and London: D. Appleton & Co., 1906.

This excellent volume contains articles from many of the foremost European specialists in internal medicine and in diseases of the digestive tract. The subjects are fully discussed both from a theoretical and practical standpoint and all modern methods of examinations are explained in detail. A special emphasis is laid upon the diagnosis and treatment of the various conditions.

The translation is well done, the illustrations are good and the general appearance of the book is fully up to the standard maintained by the publishers. Many of the articles are accompanied either by a full bibliography at the end of the section in question or by multiple references to the literature either in the text or as footnotes.

It is difficult and indeed unnecessary to select special portions of the book for review but attention should be called to a rather full discussion of the examination of the feces, a subject but lightly touched upon in many treatises upon methods of clinical examination. There is a full index of authors and an admirable subject index in the work.

C. K. W., JR.

MEDICINE.

Edited by Samuel B. Ward, M. D., and Hermon C. Gordinier, M. D.

A Case of Cardiac Syphiloma with Bradycardia and Obstruction of the Inferior Vena Cava.

CHARLES W. CHAPMAN. *The Lancet*, July 28, 1906.

The history of this case was read before the Clinical Society of London in 1897. The action of the heart was slow and there was a mitral systolic murmur. There were greatly distended and varicose veins over the middle and right side of the abdomen and a similar condition was seen on the outer side of the right leg. This condition of the abdomen had existed for at least five years. There had been a history of an infecting sore some twenty years previously and there had been no secondary symptoms. The patient had been under the author's observation for eight years. The dilatation of the abdominal veins had lasted for nearly fourteen years. During this time, there was nothing special to note save that for the greater part of the time he had been on sodium iodide, that the pulse rate ranged from thirty-three to forty-four to the minute and that there was an entire absence of syncopal attacks. He was never well if the treatment was suspended for more than a few days. He was able to work until his fatal illness.

Early in July, 1905, he succumbed to general peritonitis, the result of appendicitis.

Post-Mortem: The abdomen was distended and covered with varicose veins. On opening it, there was evidence of appendix abscess and general peritonitis. At the apex of the right lung there was a patch of obsolete tubercle. The root of this lung with the adjacent vessels, glands and mediastinal tissues were firmly matted into a mass of fibro-calcareous material. The pericardium contained an excess of fluid. The heart was pyriform; it weighed fifteen ounces. The heart muscle was brown and tough with strands of fibrous tissue. The left ventricle was dilated. The right ventricle and auricle were dilated. The cavity of the left auricle was greatly diminished and constricted in its middle to a ring which just admitted the tip of an index finger. The narrowing was due to a dense calcareous mass situated beneath the endocardium. This condition of calcification affected the whole circumference of the left auricle, the interauricular septum, the aortic sinus, and the first inch of the aorta. The mitral curtains were thin and pliable, but just above the mitral orifice the left auricle was narrowed by the ring already described. The remaining valves were normal. The coronary arteries were narrowed at their origin.

Sections of the heart muscle and left testicle confirmed the microscopic appearance of gumma.

The author states that it is an interesting question whether the bradycardia which had been present for eight years was due to myocardial invasion with gummatous deposit and subsequent fibrosis or to an early implication of the orifices of the coronary arteries.

A Case of Adams-Stokes Disease Due to a Gumma in the Intraventricular Septum.

ASHTON, NORRIS and LAVENSON. *The American Journal of the Medical Sciences*, January, 1907.

After reviewing the literature the authors record a very interesting case of Adams-Stokes disease, due to a gumma of the left ventricle. The patient was a male, aged thirty years, and was admitted to the hospital complaining of vertigo and syncopal attacks. In 1893, he contracted a venereal sore which was followed by no constitutional symptoms. His present illness began May 16, 1906, with an attack of syncope of momentary duration. This was but the beginning of a series of similar attacks. During these attacks it was discovered that his pulse was feeble and irregular, with a rate of about eighteen per minute; the heart sounds were very faint. The respiratory sounds were increased in depth, rate and intensity. The face was usually flushed, and there was twitching of the hands and rolling of the eyes. The apex beat was diffuse and visible and palpable in the fifth interspace. The radial pulses were equal. There was marked pulsation of the veins of the neck, the rate being about three times as rapid as the radial pulse. The patient received strichnia, nitro-

glycerin and sodium iodide without benefit. Autopsy showed that the endocardium and myocardium of the left ventricle presented from the insertion of the mitral leaflets to the apex, a protruding mass apparently four millimeters above the surface of the normal endocardium, considerably firmer in consistency than the cardiac muscle.

The endocardium was opaque, grayish-yellow and the surface somewhat nodular. After incising the middle portion of the interventricular septum, a firm, gummatous mass appeared, extending from the endocardium one and five-tenths centimeters toward the right ventricle, containing a number homogeneous yellowish, structureless areas, which in certain parts completely destroyed the continuity of the muscle fibres of the bundle of His, causing the heart block and symptoms both subjective and objective.

Description of a Heart Showing Gummatous Infiltration of the Auriculo-Ventricular Bundle.

ARTHUR KEITH. *Lancet*, November 24, 1906.

In the *Lancet* of July 28, 1906, Dr. Chapman recorded the remarkable case of a man who for some twelve years before his death had a slow pulse—about fifty-two beats per minute and great dilatation of the veins of the right side of the abdominal wall. He was forty-eight years of age and complained when first observed of a sense of suffocation when he leaned forward; he also complained of attacks of palpitation. During these attacks of palpitation, he would sometimes become suddenly faint, fall down, and remain unconscious for a few seconds. Examination revealed that he was well nourished and had a dark red face. The veins of the right leg and abdominal wall were dilated and tortuous and there was one large vein in the right axilla; the left leg was affected to a minor degree. The heart was beating fifty-four to the minute and a systolic murmur was heard at the apex. The pulse varied during his stay in the hospital from fifty-four to thirty-two. A provisional diagnosis was made of obstruction of the inferior vena cava by the pressure of a gumma or phlebitis. At the suggestion of Professor Osler, a complete examination of the auriculo-ventricular connecting system of muscular fibers of this heart was made to see if the remarkable diminution of pulse rate could be explained.

Dr. Chapman's explanation of the venous obstruction was found to be approximately correct. The superior, not the inferior vena cava, was obstructed by a gummatous infiltration of the heart. Since the musculature of the superior vena cava is believed to be the situation at which the heart's beat commences, it was important to determine approximately the date at which it was destroyed. The veins of the abdomen had been prominent for thirteen years before death, and at that period he began to suffer from palpitation and fainting fits. Hence it was probable at about that time, the musculature of the superior vena cava was destroyed. Since the musculature of the coronary sinus, as well as that of the superior vena cava, is derived from the sinus venosus

one may suppose with good reason that the sinus may also be a site at which the heart's beat commences. In this heart, the orifice and neighboring parts of the coronary sinus are involved in and form part of, a cicatricial mass which extends into and has destroyed all the musculature of the interauricular septum. It is probable, but the statement lacks experimental proof, that the contraction of the left auricle may commence in the musculature surrounding the terminations of the pulmonary veins. In this heart that musculature was but slightly involved in the gummatous mass. The cicatricial tissue also involved a considerable area of that part of the interventricular septum in which the auriculo-ventricular bundle is situated. The author cut from the heart that part of the cardiac septum containing the auriculo-ventricular bundle; the sections were cut serially and stained by Van Gieson's stain. In the anterior or ventricular part of the block they found the main auriculo-ventricular bundle and its right and left septal divisions apparently healthy. As they followed the bundle backwards its muscle was found to be replaced by fibrous tissue so that fifteen meters of the main bundle, the whole of the network in which the bundle begins and all the auricular musculature in the vicinity of the network were reduced to dense fibrous tissue. It may be safely assumed from the symptoms observed by Dr. Chapman and from the condition of the cicatricial tissue that the muscular connection between the auricles and ventricles had been destroyed for several years before death, yet the complete section of the bundle had not resulted in any visible atrophy beyond the point of destruction. Were this peculiar system only a conduction pathway for the auricular stimuli into the ventricle, one would expect degeneration in the system of fibers beyond the point of section, for it may be taken as an axiom in biology that abrogation of function is invariably followed by atrophy. This case lends support to those who regard the auriculo-ventricular system of fibers as concerned not only in conducting but also in originating the impulse which leads to the contraction of the ventricular musculature.

Systolic Murmurs at the Mitral and Pulmonic Valves. (Ueber systolische Geräusche an den Valvulae mitrales und pulmones.).

LUTHIE. *Muenchener medizinische Wochenschrift*, March 5, 1907.

The writer first points out the lack of unanimity in the classification of the different forms of mitral insufficiency. The terms muscular and relative mitral insufficiency are improperly used as synonymous. Relative insufficiency implies that with a marked dilatation of the left ventricle, the mitral orifice is so enlarged that the mitral segments are too short to close it. Muscular insufficiency is that form in which there is an incomplete closure of the valve due to a functional weakness, especially of the papillary muscle. The third form is that due to true endocarditis. The greatest differential diagnostic difficulties exist in determining if a systolic murmur is present at the mitral and pulmonic orifices or at the

pulmonic alone. To study murmurs, which have usually been denominated as accidental or anemic, 854 school children were examined and in 612 a systolic murmur was heard. This was present during rest or first after some exercise either at the pulmonic orifice alone or conducted to the other orifices and especially to the apex. The place of the maximum intensity was always at the pulmonic orifice and its intensity decreased towards the other orifice without change in its qualitative character. The murmur diminished in intensity or disappeared entirely with full inspiration while it increased markedly with complete expiration. The writer believes this murmur to be that of pulmonary stenosis, an opinion which Quincke had advanced some years ago. The systolic, pulmonic murmur, often heard with true mitral insufficiency, also may be regarded as a pulmonic stenotic murmur, as its intensity varies with inspiration and expiration. Attention is also drawn to the fact that the accentuation of the second pulmonic sound in youth should not be regarded as evidence of hypertrophy of the right ventricle. The frequency of these accidental murmurs has been recently confirmed by Gerhardt, who found a murmur one hundred times in 134 young people ranging in age from fourteen to eighteen.

A Fatal Case of Myxedema with Changes in the Parathyroid Glands.

DAVID FORSYTH. *London Lancet*, January 19, 1907.

The author states that the modern treatment of myxedema has so affected the mortality of the disease that opportunities of examining subjects post mortem are uncommon. The work of recent years suggests that the pathology of myxedema is more complex than it was at one time believed. The thyroid has been removed and the chronic symptoms of myxedema has followed; it has been removed and acute nervous symptoms leading to speedy death has resulted; it has been removed with no untoward accidents resulting. These results raise a doubt as to whether myxedema is attributable to the loss of thyroid function alone, and the doubt is fostered by the fact that in some cases the administration of the gland extract fails in its results. The whole question has been still more complicated by the belief that the parathyroids possess a function which is intimately bound up with that of the thyroid. To what extent if any these bodies are concerned in the production of myxedema is unsettled; in fact the author states so far as he is aware no account of their condition in atrophy of the thyroid has been published.

The clinical history of the author's case was that of typical myxedema and the progress of the case was from the first towards a fatal end. The treatment employed consisted of five grains of thyroid extract three times daily, together with potassium iodide. The post mortem showed the thyroid in the usual position, but remarkably small, pale and indefinite in outline, and merged into the surrounding tissue. The isthmus was represented only by a fibrous band spanning the trachea. After removal of the gland it was seen that it had none of the characters of the healthy thyroid. In fact the whole thyroid was but a thin sheet of fibrous tissue

wrapped around the front of the trachea. In close connection with the right lobe were two parathyroid glands. On the left side were four parathyroids, two large and two minute. All six glands were embedded in much fat and rested upon the thyroid. All were soft in consistency and of a dirty brown color. Microscopic examination showed that the thyroid gland presented the well known feature characteristic of myxedema.

The parathyroids were compared with those taken from a large number of normal subjects and certain points of difference were apparent. The differences from the normal were, first, in the arrangement of their cells; second, in the quality of their secretion; and, thirdly, to a less extent in the stroma and in the walls of the blood vessels. In contrast in some parathyroids where a more or less prolonged search is required before, an example of acinous arrangement is discovered, in these specimens there were few fields without acini and many fields contained a dozen or more. In each vesicle the epithelium was a layer of cubical cells. The colloid secretion was copious and with few exceptions all the vesicles contained this material and drops of it lay between the clumps of unarranged cells. The lymphatics of the gland were distended with the same secretion and on serial sections could be traced towards the surface uniting to form large channels which conveyed the colloid away from the gland. The author states that in examining some hundreds of parathyroids, in none did he find such vigor of secretion as in these. The author states in conclusion that he does not regard the changes in the arrangement of the cells and the amount of secretion pathological; rather are they to be interpreted as signs of excessive activity of the glands. The particular reason that we advocated for this unusual secretion will depend on the view which we take of the physiological importance of the parathyroids whether we regard them as glands *sui generis* or as glands possessing a true thyroidal function. Accepting the latter view, it seems reasonable to suppose that these changes represent an attempt on part of the parathyroids to supply the deficiency of colloid left by atrophy of the thyroid.

The Early Diagnosis of Pulmonary Tuberculosis. (Zur Frühdiagnose der Lungentuberkulose.)

AMSPERGER. *Muenchener medizinische Wochenschrift*, 1907, No. 2.

The writer describes the results obtained in the diagnosis of pulmonary tuberculosis by the Roentgen rays. This method does not render unnecessary other means of diagnosis, but adds to those already in use. The question the writer seeks to answer is what aid do the Roentgen rays give in early pulmonary tuberculosis. The cases examined were in all stages and also those suspected of tuberculosis and kept under observation preliminary to sending to sanatoria. Among the latter were some cases wrongly diagnosed. By many investigators the first symptom noted has been the diminished respiratory movement of the diaphragm. This has been attributed to pleuritic adhesions, lessened content of air in the lung and to diminished elasticity of the affected part. The writer

found this condition in only six per cent. of the early cases and when present was so evident as not to be easily overlooked. In more advanced patients this sign is more frequent. In practically all his patients he discovered changes in the clearness and size of the apices with respiratory movements. At times diminished transparency and at other times increased opacity with inspiration. In unilateral affections the difference in the affected side was striking. In the earliest cases the difference in size was first noted, then later the change in clearness. This is probably due to the diminished air-content and reduced tension of the diseased tissue and as the condition progresses there occurs an opacity of the apical fields. In some cases, however, this opacity may be the result of slight pleuritic adhesions. Oftentimes it is striking to observe that the affected opaque apex becomes still more opaque upon deep inspiration. This is probably due to the diminished elasticity of the apices still further compressed by the dilatation of the rest of the lung. The practical value of these examinations varies from case to case. Every new sign, however, is important for the early diagnosis. In doubtful cases the Roentgen rays may be decisive for the presence or absence of morbid changes. It can also be determined in what stage the disease process is and whether the pathological changes are more or less extensive than other methods would indicate.

Observations on the Parathyroids and Accessory Thyroids in Man.

FORSYTH. *British Medical Journal*, February 16, 1907.

Sandström, in 1880, first described the parathyroid glands and believed they were embryonic. This view remained unchallenged until the experimental work of Gley, Moussu, Vassale, and others, over ten years later, indicated that the parathyroids are not merely embryonic rests of thyroid tissue, but organs with a proper function, the loss of which entails a speedy death. Vincent and Jolly have, however, cast serious doubt on the reliability of past experimental work. At the present time the conflict of opinion is sharp. Lack of knowledge of the anatomy, distribution, histological variations and pathology of the glands renders a correct appraisal of their value uncertain and attempts at their complete removal and the results of such operations inconclusive. The present paper, the preliminary report of the science committee of the British Medical Association, deals with this phase of the subject. The facts elicited are based upon an examination of nearly sixty human subjects. The parathyroids in man, stated to be two on each side, were found to be very variable in number. One parathyroid on each side of the neck was present in less than half the cases, two in about a third, three in a few cases, four and five in two cases, and in one case six parathyroids. The position of the parathyroids is inconstant and there is rarely symmetry between the two sides. The most frequent site is on the lateral surface of the thyroid gland at the junction of the middle and lower thirds, the next most common site was the junction of the superior and middle thirds. The parathyroid cannot be identified with certainty except by microscopic appear-

ance. The most characteristic appearance of a parathyroid is that of an elongated, slightly flattened ovoid body of a pale pink hue with a smooth surface and a few vessels. Part of it has the yellow appearance of ordinary adipose tissue. Sometimes it exhibits the appearance of ordinary fat or that of a lymphatic gland or thymic residue, at times it may be dark and brownish and rarely absolutely black. In size it varies from a little more than a pin point up to nearly two and five-tenths centimeters.

The parathyroids occur in greatest number in the first year of life and progressively decrease with age. Under one year of age as many as four, five or six parathyroids were discovered; between one and ten years the greatest numbers found were three and four; above ten years the number never exceeded two. In subjects under twenty parathyroids were always found, above twenty they might be absent. Accessory thyroids were frequently found and they had the same sites as the parathyroids. They are rarely found under one year of age, appear more frequently after that period and attain a maximum between thirty and sixty. Although these statistics are the largest recorded, they are not great enough to be accepted without reserve. The relationship between the parathyroids and age, between the parathyroids and accessory thyroids, and between accessory thyroids and age is so clear as to be strong evidence against admitting for the parathyroids that physiological value attached to them by so many experimenters.

Erythema Nodosum and Rheumatism.

J. ODERY SYMAS. *The Lancet*, January 26, 1907.

The author describes the condition as quite common among the out patients of a hospital and one very frequently wrongly diagnosed.

Two theories are held as to the nature of erythema nodosum. The more widely accepted view is that the condition is rheumatic in origin, like chorea, tonsillitis, endocarditis, etc., a manifestation or symptom of the rheumatic state. The second view, which is gradually gaining ground at the present time, is that the condition is an acute infection fever of a definitely specific nature.

He reports a case which showed a very close resemblance to acute rheumatism and then compares, seriatim, the predisposing causes of the two diseases.

There is practically no difference in the occurrence of the two diseases as far as to age, but there is a wide difference as to sex, rheumatism being more common in males, while erythema nodosum is nearly three times as common in females.

Rheumatism is more common in the fall, while season seems to have no effect on erythema nodosum.

The prodromal symptoms of erythema nodosum may extend over a period of from one to three or four weeks. They are malaise, fever, headache, pains in the limbs, dyspepsia and tonsillitis. They are often misinterpreted and a diagnosis of rheumatism, influenza, gastric fever or croup-pour pneumonia is made, and when later the typical rash appears, it is

regarded as secondary in character. There is, however, but little evidence to prove that erythema nodosum is secondary to any infective process, unless it be acute rheumatism. In considering the relationship between erythema nodosum and rheumatism, too much importance must not be attached to the existence of febrile arthritis, a symptom which is met with in many diseases other than rheumatism, and it must be remembered that the arthritis of erythema nodosum is in many ways very different in character from that of rheumatic fever.

The arthritis of erythema nodosum may assume various forms. The common form is pain in the joints, without any objective redness or swelling and but slight tenderness on movement. Sometimes the joints present the appearances of gout, but they are never extremely painful. Still other forms may present the appearances of gonorrheal rheumatism or rheumatoid arthritis.

In the majority of cases of erythema nodosum, the temperature is not raised, but in some acute cases the temperature rises to one hundred and three degrees or one hundred and four degrees and continues for several days before the arthritis or rash appears. Sometimes the temperature takes on an intermittent character.

Erythema nodosum may be associated with other forms of erythema, the same as sometimes occur in acute rheumatism.

Bronchitis is commonly associated with erythema nodosum, while it is uncommon in rheumatism.

Phlyctenulae have been found in thirty-eight per cent. of cases of erythema nodosum, while they have not been found in rheumatism.

In rheumatism, recurrences and relapses are frequent, but in erythema nodosum they are rare.

Endocarditis results in about thirty per cent. of cases of rheumatism, while in erythema nodosum the percentage is but ten per cent. to twenty per cent.

Salicylates relieve the symptoms of rheumatism, while they have no effect in erythema nodosum, but may excite delirium.

While the author's observations and deductions are not conclusive, yet they seem to support the view that erythema nodosum is a specific, acute febrile disorder; that infection takes place through the tonsils or lungs; that after a prolonged incubation period and period of prodromal symptoms, a specific rash appears; and that convalescence is accompanied by profound anemia and malaise.

Haematogenous Albuminuria.

R. KINGSTON FOX. *Lancet*, August 25, 1906.

The author states that nearly fifty years passed after the connection between albuminous urine, dropsy and kidney disease was established by Dr. Bright in 1827, before the fact was recognized that albuminuria was found in a class of persons who were not the subjects of kidney disease, at least, in its usual forms. Such keen observers as Gull,

Andrew Clark, Vogel and Jaccoud did not fail to observe these anomalous cases of albuminuria at an early date, but so far as appears the first clear account of them was given in Moxon's paper in Guy's Hospital reports for 1878. Pavy defined the cyclic type in 1885, and the more favorable view of such cases which was generally accepted was strongly contested by George Johnson. Fürbringer and Leube, Capitan, Sterling and Grainger Stewart making observations on soldiers, cadets, children and others showed that a large percentage of persons accounted healthy by every other test passed albuminous urine at some time in the day. It has thus come to be established that there is a form of albuminuria of common occurrence, the subjects of which are generally young men or boys, who are often pale, wanting in vigor and dyspeptic and are liable to faints or headaches; they usually have excitable hearts and the arterial tension varies under the slightest influence. The urine is not of a continuous low specific gravity. The albumen, which is mainly serum albumen, is often present only at intervals, following the rise from bed, after a hearty meal, or coming on after muscular exertion, cold bathing or emotional strain. In other cases its presence is continuous, but the amount varies. The urinary sediment contains no tube casts or renal cells with the exception that occasionally a few hyaline casts may be found. This condition has been variously termed transient, intermittent, physiological, latent, dietetic, cyclic, functional, paroxysmal, neurotic or emotional, postural or orthostatic, benign and spurious albuminuria.

The number and variety of these designations are in accord with our ignorance hitherto of the pathology of the disorder.

Much stress has naturally been laid on the influence of blood pressure altered by exercise, posture, or emotion as a cause of this condition; yet, the same causes acting in other persons produce no such effect. Moreover, the signs of an unstable neuro-vascular mechanism are absent in some cases.

Prout believed that the condition was due to a change in the albumens of the blood apart from kidney disease. This view was sustained by Bamberger and Semmola. Teissier thought that the kidneys might be ill developed so as to be permeable to the albumin of the blood. Sir A. E. Wright's hemotological studies have produced strong grounds for the belief that this kind of albuminuria is due to a disorder of the blood, the chief feature of which is lessened coagulability. In four cases of this form of albuminuria the coagulation time of the blood averaged one minute and fifty seconds. It is well known that the salts of calcium increase the coagulability by promoting the formation of fibrin.

By the administration of calcium lactate to these four subjects, the time was reduced to an average of one minute and twenty seconds, the albumen disappearing from the urine. In four cases with signs of kidney disease the average coagulation time was one minute thirty seconds, and it was reduced by the administration of calcium lactate to an average of fifty seconds. The albumen was unchanged or increased in amount.

The subjects of this form of albuminuria in question have usually been undergoing rapid bodily growth, in which there is a demand for calcium, especially for bone formation, so that a deficiency of this substance in the system is likely to occur. Experience also shows that a milk diet which is rich in calcium, cures the albuminuria in many cases. The control of the albumen by the use of calcium lactate is the chief clinical test. It has been confirmed by other observers. The author has used the test in sixteen cases of albuminuria. In seven the albumen disappeared or was reduced to a small trace after taking the lactate. These were he believes all instances of hematogenous albuminuria. In the remaining nine, the albumen persisted. In most of the cases, definite signs of kidney disease were present.

Diagnosis: In most of the cases of hematogenous albuminuria the conditions already noted as to age, nervous temperament, headaches or faints are common. The chief diagnostic signs are: (1) The albumin is absent or lessened in the night urine. (2) It disappears after taking calcium lactate; and (3) The urinary sediment contains no casts or renal cells, but often uric acid crystals or oxalates.

Prognosis: Many years of experience is needful to decide with certainty whether these cases eventually become the subject of kidney disease. S. West believes that many cases of albuminuria in the apparent healthy eventually develop kidney disease.

Duke, who was inclined to the same view, has abandoned it, finding that many of his former juvenile patients are now robust men. Pavy and Broadbent both take the same view. Teissier's record of twenty-eight cases under observation for ten years showed no deaths and only four ephemeral recurrences of albumen. Pribram states that the cases always recover even after lasting several years and that the albuminuria of puberty never develops into nephritis.

The author records the sequels of 111 consecutive cases of albuminuria found in life examinations between 1884-1896; nineteen were more or less of the cyclic type. The result of inquiries made after a lapse of a period varying from ten to twenty-two years is as follows: of the ten cyclic cases, one patient died from tuberculosis, and one from accident; the remaining seventeen are living, most of them in good health. The sequel of the ninety-two other cases (including sixty-three of traces only) is also not unfavorable; six patients are known to have died and eight have been lost sight of; seventy-eight are living, mostly in good health. So far, then, the evidence suggests that we need not take a serious view of this disorder. The author states that it induces pathological changes, as chilblains and urticaria are pathological and the term Physiological albuminuria is a misnomer. The prognosis is mainly the state of the blood debility.

The treatment. Calcium lactate in large doses over a long period. In a few refractory cases, the strontium lactate has worked well. Fresh air, moderate exercise short of fatigue and plenty of milk are useful adjuvants.

W. H. SUMMONS. *Intercolonial Medical Journal of Australasia*, November, 1906.

The mode of onset of symptoms in tuberculosis meningitis is always vague and a definite diagnosis at first is almost impossible. The author reviews a number of his cases and classifies them in two divisions. Those where a pre-existing tuberculous focus is known to exist and those where there is apparent health till symptoms appear. Under the first division are included cases subsequent to tuberculous bronchial or mesenteric glands, joints or spinal disease, tuberculous skin lesions with adjacent glands affected. The author cites three cases secondary to spinal caries where the onset was very rapid. The second class of cases frequently presents great difficulties from a diagnostic standpoint. One of the author's cases was diagnosed as a peripheral intestinal irritation but a few days after died of tuberculous meningitis. On the other hand three cases were diagnosed as a typical tuberculosis which recovered and were found to be cases of intestinal toxemia and isolation. The mode of onset in the second division may be divided into five classes: (1) a change in demeanor; this is one of the most important of the early symptoms and must always be considered suspicious; (2) a convulsion; this may be considered the mode of onset in eight per cent. of cases; (3) a slow oncoming drowsiness after whooping cough or measles; the primary seat in most of these cases is a caseous bronchial gland; (4) with signs of intracranial tumor; (5) like typhoid fever, the case is one of general tuberculosis with the meningeal irritation manifesting itself late. After reviewing the modes of onset in his cases of tuberculous meningitis, the author gives the following symptoms: change in disposition, drowsiness, wanting to be left alone, irritability, frowning, altered expression of the eyes, a faraway look often first noticed by the mother, severe headache, vomiting, slight irregularity of pupil and pulse, wasting, constipation, Kernig's sign, convulsion, after which the more marked and characteristic symptoms develop or become intensified.

ALBANY MEDICAL ANNALS

Original Communications

A NOTE ON LIONEL WAFER, SURGEON AND BUCCANEER, AND HIS DESCRIPTION OF THE ISTHMUS OF AMERICA.

By GEORGE BLUMER, M. D.

In these days, with the building of the Panama canal in progress, and with public attention focussed on the Isthmus, it may properly be recalled that one of the first, if not the first, accurate accounts of these parts and their inhabitants was from the pen of Lionel Wafer, a surgeon of Welsh extraction who was associated in the South Seas with those piratical adventurers and explorers, the buccaneers. Wafer's book, which was issued originally in 1699 from the press of Knapton, had its origin in an accident, for had it not been that he sustained a painful injury at the beginning of his voyage across the Isthmus, which necessitated a stay of some months in those parts, it might never have been written. The account which Wafer gives of the geography, the flora and fauna, and of the inhabitants, is penned in a rather arid style, but impresses one as being based upon accurate observation. We cannot entirely agree with Clark Russell, who states in his life of Dampier that Wafer's narrative is dry reading, for, though Wafer was not to be compared in acuity of intellect with Dampier, the book contains much of value. What little of medical interest it contains will be found appended.

The actual diseases of the natives, or Indians, as Wafer calls them, are little discussed, but that there were fevers is apparent,

and Wafer's account of their method of bloodletting in these affections is not without interest. It suggests that the practice was not learned from the Spaniards, but was probably discovered by the inhabitants themselves. "It so happen'd," says Wafer, "that one of *Lacenta's* wives being indisposed, was to be let Blood; which the *Indians* perform in this manner: The Patient is seated on a Stone in the River, and one with a small Bow shoots little Arrows into the naked Body of the Patient, up and down; shooting them as fast as he can, and not missing any part. But the Arrows are gaged, so that they penetrate no farther than we generally thrust our Lancets: And if by chance they hit a Vein which is full of Wind, and the Blood spurts out a little, they will leap and skip about, shewing many Antick Gestures, by way of rejoycing and triumph." Wafer goes on to describe how he taught them to bleed from a vein, and nearly lost his life so doing, the patient's husband being frightened by the steady flow of blood. This part of the description is accompanied by an excellent woodcut showing a patient as full of holes as a pincushion.

In discussing the inhabitants of the Isthmus, Wafer gives an excellent description of Albinism, which seems to have been rather common, and which even now is stated to be endemic in some tropical countries (Crocker). Wafer says, "There is one Complexion so singular, among a sort of People of this Country, that I never saw nor heard of any like them in any part of the World." * * * "They are White, and there are of them both Sexes; yet there are but few of them in comparison with the Copper-colour'd, possibly but one to two or three hundred. They differ from the other *Indians* chiefly in respect of Colour, tho' not in that only. Their Skins are not of such a White as those of fair People among *Europeans*, with some tincture of a Blush or Sanguine Complexion; neither yet is their Complexion like that of our paler People, but 'tis rather a Milk-white, lighter than the Colour of any *Europeans*, and much like that of a white Horse." Wafer goes on to describe how the albinos are covered with milk-white down, have white hair and eyebrows, and cannot see well in the sunshine. He concludes after describing them, that they are not due to intermarriage of whites with Indians, for, says he, "But neither is the Child of a Man and Woman of these white *Indians*, white like the *Parents*, but Copper-colour'd as *their* Parents were." He somewhat dubiously

offers the explanation of the Indians that the albinos arise from "the force of the Mother's Imagination, looking on the Moon at the time of Conception." "But this," he says, "I leave others to judge of."

In the chapter on "Fishes," Wafer describes, though with little detail, cases of fish poisoning. He states that a certain fish called "paracood," evidently our modern barracuda, is, when caught in certain regions, poisonous. He describes an antidote worthy of the invention of a Pasteur. Says he, "But there are some particular Banks off at Sea, where you can take no *Paracoods* but what are poisonous. Whether it be from some particular Feed they have there, or from what other Cause, I know not; but I have known several Men poison'd with them, to that degree as to have their Hair and Nails come off; and some have died with eating them. The Antidote for this is said to be the Back-bone of the Fish, dried and beaten to a Powder, and given in any Liquor. I can't vouch for the Success of this my self; but several have told me, That they have us'd it themselves, when they have found themselves sick with eating any *Paracood*; but that upon taking the Bone thus powder'd, they have found no other ill Effect, but only a Numbness in their Limbs, and a Weakness for some time after. Some will pretend to distinguish a poisonous *Paracood* from a wholesome one, by the Liver; which as soon as they have taken the Fish, they pull out and tast. If it tast sweet, they dress and eat the Fish without Fear; but if the Liver be bitter, or bite the Tongue like Pepper, they conclude the Fish to be naught, and throw it away." This account corresponds fairly accurately with some of the statements regarding fish poisoning in modern works. It is well known that certain varieties of fish in West Indian waters, especially some of the mackerel family, are poisonous, and the Spaniards describe a certain form of fish poisoning, "*Siguatera*," as due to them. The belief that certain organs of poisonous fishes are especially toxic also seems to be well authenticated.

Outside of these few paragraphs, Wafer's book is bare of medical facts, aside from a few scant notes on accouchement among the native women, and an incidental statement regarding an outbreak of typhus fever among the buccaneers. Entirely apart from its medical aspects, however, the book contains many interesting facts and statements.

COXA VARA IN DISTINCTION FROM HIP-JOINT DISEASE AND CONGENITAL DISLOCATIONS.

By ARTHUR HOLDING, M. D.,

Skiagraphist at the Albany and St. Peter's Hospitals, Albany, N. Y.

The normal angle formed by the long axis of the neck of the femur with that of the shaft of the bone varies from 110 to 140 degrees. Coxa vara or incurvation of the neck of the femur, a condition in which this angle is less than 110 degrees, was first described by E Muller in 1889 in these words: "In adolescence without apparent cause, or following injury, the patient begins to limp, and to complain of fatigue and pain about the affected joint on exertion, shortening of the limb is soon apparent, and is caused by elevation of the trochanter above Nelaton's line. The limb is usually extended or flexed to a few degrees and somewhat rotated outwards. The motion of the joint is slightly diminished, particularly in abduction. There is no local tenderness on pressure." In addition to this statement of Muller's it might be well to note the awkward rolling gait when both joints are involved, a limp when one is involved. In extreme cases when standing the leg cannot be moved beyond a vertical line drawn through the greater trochanter. The rolling gait increases, the patient may be compelled to use crutches.

In a case described by Whitman, as the patient moved on crutches the adduction was so great that the legs were crossed: "scissor leg" deformity; on flexing the right thigh the limb crossed that of the opposite side and with the thigh at a right angle to the trunk outward rotation was such that the heel was in a line with the opposite anterior superior spine. With the limbs parallel and extended separation at the knees to three and one-half inches only is possible. Flexion at once crosses them. The trochanters were one and one-half inches above Nelaton's line.

Tubby sums up the symptoms as follows:

1. Age—generally adolescence, less often childhood.
2. Class of patients—those who carry weights or do much walking, and are subject to prolonged fatigue.
3. Onset—Peculiar stiffness of the hip, worse on rising after sitting for a time, but it is relieved by complete rest.

4. Limping if one side is affected; waddling if both sides are affected.

5. Shortening amounting to as much as one and one-half inches.

6. Prominence of the trochanters, especially on flexing the thighs.

7. Displacement of the trochanter above Nelaton's line and backwards as well.

8. Rotation outwards of the limb, and eversion of the foot.

9. Limitation of inversion and final loss of abduction with, in extreme cases, "scissors-legged progression," and inability to walk without crutches.

10. Tilting of the pelvis with consecutive scoliosis.

11. Rachitis in some cases has occurred in childhood

Negatively—

1. No local inflammatory swelling nor tenderness on pressure.

2. Absence of the up and down movement on traction characteristic of congenital hip displacement.

3. Suppuration never occurs nor thickening of the trochanter.

VARIETIES.

According to causes, the cases have been divided into—

Coxa vara rachitica—due to rickets or osteo-malachia.

Coxa vara traumatica—due to fracture.

Coxa vara adolescentium—due to local osteo-malachia of the neck of the femur and usually presenting in adolescence.

Coxa vara osteo-arthritis—(*coxa morbis senilis*) occurring in elderly people, especially in those who have increased in weight.

Some writers prefer to classify these cases under the head of *arthritis deformans*.

PRIMARY AND SECONDARY.

Etiology—In all varieties of coxa vara, except the traumatic, the cause is a disproportion between the weight of the body and the strength of the supporting structure: "the support may be disproportionately weak because of inherited delicacy of structure: it may be weakened by injury or by disease: it may be overburdened by weight or strain."

Diagnosis, Differential—Cases of coxa vara are more often mistaken for cases of (1) incipient hip-joint disease or (since

Prof. Lorenz's visit to this country) (2) congenital dislocations of the hip.

(1) Absence of muscular spasm and the signs of inflammation should differentiate it from tubercular coxitis. In doubtful cases injections of tuberculin properly given will decide.

(2) The absence of an up and down motion of the head of the femur and the history should distinguish this condition from that of congenital dislocation.

Careful mensuration of the actual and apparent shortening of the legs with especial attention directed to the measurement of the distance between the tops of the greater trochanters and a transverse line drawn perpendicular to the linea alba passing through both anterior superior iliac spines, said line being prolonged around the flanks to the insertion of the gluteus maximus muscles (base of Bryant's triangle) will simplify the diagnosis.

An X-ray picture will make the diagnosis absolute.

Treatment—The treatment indicated is to remove cause, namely: remove the superimposed weight from the weakened support, using in addition any indicated internal medication. In children confinement to bed on a Bradford frame and the use of the Gorham modification of Buck's extension, followed later by a plaster hip spica bandage gives very good results. Adults as a rule will not submit to confinement to bed nor is it necessary in those who will intelligently co-operate in protecting the hip from all weight bearing and trauma. A pair of crutches is the simplest and cheapest way of removing the weight from the hip. Those who do not wish to carry these visible evidences of invalidism can be treated by the use of a plaster hip spica extending from the tenth rib to the ankle, or by an accurately fitted hip splint so constructed as to form an ischiatic crutch, counter-extension being secured by a foot plate in the shoe. The sole on the shoe of the other foot may be raised. Joints can be arranged in the brace at the hip and knee.

In cases of marked deformity, after the above treatment has allowed the bone to recover from its condition of osteoporosity, osteotomy, linear or cuneiform, followed by fixation may be indicated.

In conclusion, let me emphasize the following points:

1. Secondary coxa vara is the commonest deformity occurring in lesions of the hip.

To Illustrate Dr. Holding's Article on
"Coxa Vara in Distinction from Hip-Joint Disease and
Congenital Dislocations."

Albany Medical Annals, September, 1907



COXA VARA OSTEO-ARTHRITICA (Coxa morbis senilis)

Note the osteo-porosis in the bone shown by irregularity in the density of the shadow, also note the bone proliferation at "K."

2. Primary coxa vara occurs more frequently than it is recognized.

3. Coxa vara is commonly mistaken for tubercular coxitis and occasionally for congenital dislocation of the hip.

4. While "hip disease" in children is usually tubercular coxitis; hip disease in adults is usually coxa vara osteo-arthritis (coxa morbis senilis).

Case 1. Male child, aged 10 years. School-boy. Grandfather, aunt, and uncle on mother's side died of tuberculosis. In July, 1904, after a fall from fence patient was noticed to grow pale, thin, and lost appetite; while dressing he was noticed to lift his left leg by hand, there was a slight limp on left side and when running patient held left hand on left hip. No night cries. No evidences of increased temperature. No rachitic history.

Feb. 7, '05—On admission to the Child's Hospital, service of Dr. Elting, at the left hip joint there was decided restriction of motions of hyper-extension inversion, and abduction; no spasm of muscles; no hypersensitiveness of the joint when manipulated; absence of any up and down motion of head of bone in acetabulum. Left trochanter more prominent on hip flexion.

Apparent shortening (left leg) 1 cm.

Real shortening 1 cm.

Distance between greater trochanters and external malleoli equal on both sides. Left trochanter 0.6 cm. above Nelaton's line.

Base of Bryant's triangle on left side 0.6 cm. shorter than right.

Left thigh circumference 2 cm. less than right.

Left calf circumference 0.5 cm. less than right.

Patient gave no temperature nor local reaction when tuberculin was injected.

Treatment—Extension of counter extension by use of Bradford frame and Gorham extension. (Feb. 7 to Apr. 14, 1905.)

Plaster spica, elevated shoe and crutches. (Apr. 14 to June 13, 1905.)

Case 2. Female child, age 6 years. No tubercular nor rachitic history in family. Child did not walk until four years of age (is deficient mentally) and since that time mother has noticed a slight limp which has gradually increased. Child was born prematurely at the seventh month. Always poorly nourished. No night cries; no loss of weight; no evidences of inflammation about hip joint; no up and down motion.

On admission to the Child's Hospital left thigh was held in a position of slight adduction, motions of abduction, hyperextension and eversion were limited; no tenderness of the joint on motion.

Apparent shortening, left side, 2 cm.

No reaction to tuberculin.

Real shortening, left side, 2 cm.

Distances from trochanters to external malleoli equal on both sides.

Base of Bryant's triangle on left side shortened 0.7 cm.

Greater trochanter above Nelaton's line on left side.

Treatment—Extension and counter extension on Bradford frame with Gorham extension. (Jan. 13, 1906.)

Plaster spica. (June 14.)

Case 3. Male adult, age 31 years. No tubercular nor rachitic history in family. No traumatism. Always well and strong. Patient very long-boned standing six feet two inches in stocking feet. Occupation carpenter.

Since October, 1904, patient has noticed a lameness about the right hip; this has caused patient to favor this leg and has caused a slight limp. The soreness is relieved when the patient supports no weight on that leg, there are no local symptoms of inflammation and no muscular spasm. No evening rise of temperature, patient has not slept well at night, has lost weight and appetite. He has had to stop his usual work.

On examination, the motions of abduction and hyperextension are limited, the leg is held in a position of slight adduction and eversion, on flexion at the hip the right greater trochanter becomes more prominent than the left.

Apparent shortening, right side, 3 cm.

Real shortening, right side, 2 cm.

Distances from trochanters major to external malleoli equal.

Base of Bryant's triangle 2 cm. shorter on right side.

Greater trochanter above Nelaton's line on right side.

Treatment—Application of a hip splint combining an ischiatic crutch with extension and counter extension.

Case 4. Male child, aged 10 years. Maternal aunt died of tuberculosis, otherwise no history of tuberculosis nor rickets. Patient has no brothers nor sisters. In August, 1904, without any apparent cause, patient commenced to be less active among his fellows, he exercised less and ceased to join in "running" games. His appetite diminished, he grew pale and lost strength, developed a slight limp on the left side; had no night cries, no evening rise of temperature. He was referred to Dr. Elting as a case of tuberculous hip disease.

On admission to the Child's Hospital measurements showed:

Apparent shortening, 2 cm.

Real shortening, 1.6 cm.

Distances between greater trochanters and external malleoli equal on both sides. Left trochanter 1 cm. above Nelaton's line.

Base of Bryant's triangle on left side 1 cm. shorter than on right.

Patient gave no temperature nor local reaction after being given an injection of tested tuberculin.

Case 5. Male child, aged 13 years. Complains of slight limp in left leg. Family history negative. Symptoms developed without apparent cause six months previous to my first examination of the patient and have gradually increased since. The patient was referred to me by Dr. Elting

for X-Ray examination at St. Peter's Hospital. Physical examination showed:

Apparent shortening, 1.5 cm.

Real shortening, 2.0 cm.

Distances between greater trochanters and external malleoli on both sides equal.

Base of Bryant's triangle on left side 1.5 cm. shorter than on right side.

Diagnosis of Coxa Vara Adolescentium verified by X-Ray picture.

Case 6. Male adult, aged 48 years. Complains of a shortening of right leg and a limp that is gradually growing worse. Patient presents a history of a tubercular coxitis in childhood and a son died of tubercular pneumonitis. The present lameness has been gradually developing for the past five years but during the last two years has been much aggravated. No joint tenderness on palpation, no elevation of temperature, no loss in weight, nor strength. There are no external evidences of his attack of coxitis in youth, other than apparent shortening of the leg, prominence of the greater trochanter (which is above Nelaton's line). Mensuration showed that the site of the real shortening was at the line between the top of the greater trochanter and the anterior superior spine of the innominate bone. Abduction and hyperextension were limited. An X-Ray picture revealed no area of osteoporosis. An exploratory incision was made and what appeared to be caseous tissue was removed. The pathologist reported the tissue to be normal bone scrapings. This was undoubtedly a case of secondary coxa vara following tubercular hip disease in childhood.

Case 7. Male adult, aged 22 years, weight 238 pounds. Family history negative. Previous to an attack of typhoid fever in his eleventh year, he weighed 110 pounds. His attack of typhoid confined him to bed four months, a relapse and bed sores being the only complications of the disease. During convalescence a stiffness of the right hip developed, to relieve which, the attending physician administered vigorous passive movements of the joint. Motion of or pressure on the hip caused a great deal of pain compelling the patient to use crutches when walking. When sitting the right knee seemed more prominent than the left as if the right thigh was longer than the left. The circumference of the right knee was greater than the left and the superficial veins became varicose. After his typhoid the patient continually gained in weight despite active exercise of playing baseball and taking long tramps. The patient noticed that he involuntarily favored his right leg, everted the right foot, his right knee assumed a valgus position. Of recent years he has noticed that while he could flex his left thigh on his abdomen as one naturally does while shining his own shoe, he could not so flex his right hip. When he has supported his weight on his hips for some time he has a dull pain in his right hip or knee.

Mensuration shows:

Apparent shortening $\frac{3}{8}$ inch.

Real shortening, $\frac{3}{4}$ inch.

Distances between greater trochanters and malleoli equal.
Shortening on base of Bryant's triangle $\frac{5}{8}$ inch.
Diagnosis—Coxa vara secondary to typhoid sequella in bone.

Case 8. Referred by Dr. Elting. Female adult, aged 58 years. Complaints of lameness of hip extending over the past ten years, having gradually developed after an attack of typhoid fever. Family and personal history otherwise negative. The patient has submitted to every kind of treatment she has ever heard of but without relief and for the past year has been compelled to use crutches.

Abduction and hyperextension limited. Trochanter prominent and above Nelaton's line. Apparent and real shortening present, the site of shortening being in the interval between the greater trochanter and the anterior spine of the innominate bone.

Diagnosis—Coxa Vara Senilis.

Case 9. Male adult (Mr. D.), aged 68 years. Family history negative. Complains of lameness of right hip. Alleged onset followed a bruise sustained twelve years previous; patient was thrown from a wagon by a runaway horse. Patient has increased in weight during the last 15 years.

The same symptoms of coxa vara as in the previous case present. The patient has tried several methods of treatment and numerous doctors without relief.

X-Ray picture verifies the diagnosis of: Coxa Vara (morbis) Senilis.

Case 10. Female adult (Mrs. C.), aged 72 years. Has had previous operation for carcinoma uteri. Patient had an insignificant fall which disabled her right leg. She was brought to the Albany Hospital with a diagnosis of fractured hip. An X-Ray photograph showed a peculiar form of coxa vara.

THE SEAT AND SIGNIFICANCE OF ABDOMINAL PAIN.

Read at the commencement of the Albany Medical College, May 3, 1907.

By JEROME MEYERS, A. B., M. D.

Next to death the surest phenomenon of life is pain. This holds true throughout every period of man's life; the infant thrust upon a cold alien world first cries with pain and breathes; with pain the mother enriches and maintains the race; rare is the individual who has not suffered pain from the various diseases and manifold accidents common to existence. Pain, the origin and causation of which have vexed the physiologist and neu-

rologist, the mere definition of which has baffled all the philosophers, is however, no hostile menacing foe of life, but, correctly interpreted, is the greatest bulwark for the preservation of the race and of the individual, and must become an ever greater safeguard, the more keenly and swiftly its cry is heard and translated into pathological processes. Pain, then, is a beneficial reaction through the nervous system of altered structure or disordered function against threatening forces. Viewed in this light, it is as conservative as the processes of inflammation of which it is a large part. The survival of the fittest would have been impossible had not pain warned the stronger forms of life of danger; to survive means the possession of a nervous system that reacts more quickly to external stimuli, prominent among which are those of pain.

No one symptom is universally present in all diseases, but of all the subjective signs of bodily affection, pain is the most prominent and frequent. And in no other domain of the body can pain be so intense and agonizing, so vitally important as to its deeper meaning, so crying in its demand for diagnosis and treatment as in the abdominal cavity.

Pain in the abdominal cavity. But do we really suffer pain within this cavity? All pain is subjective. If one of our fingers is inflamed we do not really endure pain in the finger; what we really suffer from is the recognition by our highest faculties of disturbing sensory impressions referred to the ends of the sensory nerves that have been irritated. Pain is a result of some reaction in our brains and is felt only as it arouses our attention or disturbs our stream of consciousness. Dements and the lower grades of idiots whose consciousness is wholly or partly obscured and whose attention is attracted with difficulty show uniform diminution of sensibility to pain. Pain is unfelt in fainting, coma, or under the effects of anesthetics, as ether or chloroform. Normal individuals differ greatly in their capacity for feeling pain from similar lesions. Pain may be entirely of central origin, that is, originating in the brain itself, as in some of the sensory stigmata of hysteria. The central reception of pain stimuli may be so altered from peripheral changes in spinal cord lesions or in locomotor ataxia that the incorrect localization of pain in these diseases constitutes a mental illusion, which we shall touch on again later. But to speak broadly, if we have an

inflamed finger, the part is painful to the touch. Moreover, we know that if we prick or burn that finger in its healthy state we suffer pain. Therefore, we have a right to infer that when that finger is inflamed and we suffer pain localized in it, that it is the finger itself through its nerves that is causing the pain directly. Therefore, to suffer pain in any part it must be normally sensitive to stimuli of pain. Now, if almost the entire abdominal viscera are normally insensitive to painful, tactile, thermic, chemical and electrical stimuli, how is it that man suffers pain from abdominal lesions?

The abdominal cavity is the largest serous sac of the body. It holds the great organs of digestion and elimination, and is lined by a delicate but very resistant protective membrane, which at various points is reflected upon the contained viscera, thus forming the parietal and visceral peritoneum, the former lining the walls of the abdominal cavity, the latter covering the organs, the reflections forming the various omenta and mesenteries, which connect the two portions of the peritoneum. The nervous supply of the stomach proceeds from the vagus and the sympathetic system. The small and the large intestines, with the exception of the lower portion of the rectum, are innervated by the sympathetic as are the liver, the spleen, and the parenchyma of the kidneys. The capsule of the kidney, its pelvis, the ureter, the duodenum, and the retroperitoneal portion of the common bile duct are supplied by the intercostal nerves or are in close relation to them. The abdominal wall is supplied by the lower seven intercostal nerves and the ileo-hypogastric from the first lumbar nerve, each intercostal nerve being connected with the adjoining ganglion of the sympathetic by one or two filaments.

It is recorded in Xenophon's *Anabasis*,¹ "that after one of the battles, Nikarchos, the Arcadian, came in flight wounded in the abdomen, holding his entrails in his hands." Haller,² writing in the eighteenth century, expressed the belief that the intestinal mucosa, the liver, the spleen, and the kidneys possessed little sensibility, that the visceral peritoneum was totally insensitive and the parietal had little or no sensitiveness. Bichat noticed at the end of the eighteenth century that electrical, chemical, and mechanical irritation of the organs supplied by the sympathetic system do not produce pain, but at the same time thought that the sympathetic could be the seat of neuralgias. Majendie

showed that pain cannot be provoked in any part of the sympathetic. According to Max Buch,³ however, this is true of the nerve of healthy animals only, for Wutzer, Flourens, Brachet, Valentin, and Longet, he states, have shown that when the sympathetic has been long exposed to an electrical stimulus, or when hyperemia or inflammation is induced in it, all parts of the nerve become sensitive, and the ganglia more than the trunks. As early as 1800 Sommering states that pain can be produced in the sympathetic when it is stretched or pressed too much. In regard to the vagus, Buch's investigations on the rabbit led to the same result as those of Claude Parnard and Budge: the vagus is absolutely insensitive to every stimulus, faradic or mechanical. Piorry⁴ states, in 1821, that Bichat had seen dogs devouring their own intestines and tearing their own peritoneum when these had prolapsed through abdominal incision. In a case of prolapsed mucous membrane of the large intestine, as reported by Steinhauser,⁵ it could be touched alternately with ice and a metal instrument so hot that it could not be grasped by the hand, or it could be pierced by a needle, rubbed with caustic, or a piece cut from it, yet the patient had not even the sensation that the membrane had been touched, the experiments being repeated many times with the same results. "Every surgeon knows," says Bier,⁶ "that in the human being parts of the intestine may be cut, burned, pricked, or crushed in the second stage of the operation for artificial anus (in which the intestine may be opened without any anesthetic) without the least pain being felt by the patient." "The relative great bulk of the viscera to the nerves that supply them," remarks MacKenzie,⁷ and the varied functions these nerves subserve, suggest the idea that there can be but a very limited amount of sensibility. To the methods employed for ordinary stimulation (touching, pricking, pinching, etc.) it is well known that the viscera are insensitive." But it is Lennander⁸ who has given the most detailed exposition of the problem, based on numbers of operations done under local anesthesia induced by Schleich's Sol., which contained small amounts of cocain and morphine. Stated concisely, Lennander found that the whole intestinal tract, including the appendix, the mesenteries, the omenta, the anterior border of the liver, the serous covering of the bladder, as well as the parenchyma of the kidney, are entirely insensitive to operation, even with the ther-

mocautey. But the parietal peritoneum of the anterior and posterior walls is exceedingly sensitive, both when it is cut across, or pricked, or when friction is put upon it, or when traction of any form is made on it. The mesenteries and omenta are wholly insensitive in themselves, but immediately traction is put on them so as to pull on the parietal peritoneum, pain is most bitterly complained of. The mesentery of the small intestine gives no sensation to cutting, clamping or burning, but if it is pulled forward abdominal pain is experienced. Adhesions between coils of intestines may be cut or pulled unfelt, but adhesions between viscera and the parietal peritoneum give rise to exquisite pain if they be stretched in any way. A diseased appendix and its mesentery exhibit no sensitiveness either to pain or touch during operation, provided there is no dragging through them on the parietal peritoneum of the posterior wall of the abdomen. The same is true of the cecum and the last part of the ileum and its mesentery. Drag on the cecum and mesentery of the appendix causes at times some of the same symptoms as those complained of in acute appendicitis; pain in the pit of the stomach, nausea, vomiting.

Examples of the normal insensibility of the viscera and of the great sensitiveness of the parietal peritoneum need no further multiplication. Recently, however, Kast and Meltzer,⁹ working on dogs and cats, claim to have shown that the intestine is sensitive, that the results reached by Lennander and other surgeons are due entirely to the general action on the intestines through the blood of the cocain contained in the Schleich's solution. Now, even admitting that cocain has the same effect in the human being as in lower animals, the tremendous difference under like conditions between the sensibilities of the intestines and the parietal peritoneum must make any degree of intestinal sensation a quite negligible factor when compared with the great irritability of the mural peritoneum. Again, even admitting pain was felt, no method of experiment on lower animals can discover whether the pain is really felt in the irritated intestine or in some other part of the body as we shall show. Besides, cocain surely does not account for the fact that prolapsed intestinal mucous membrane is insensitive or that during operations the entire thickness of the intestinal wall may be cut or burned without pain.

The following observations, taken through the courtesy of Dr. John Sampson of Albany, on a case of double ovarian cyst operated upon by him under local anesthesia with a solution containing only 1-1000 cocain may be of confirmative interest. The patient herself replied to our questions whether she suffered pain or not or complained herself of being hurt.

Incision of skin, fascia, and muscle, no pain. Pain on reaching parietal peritoneum. Complains of continuous pain in back. No pain in lifting cocainized parietal peritoneum. Pain on cutting and pinching uncocainized peritoneum just above symphysis. None on pinching left tube four times. No sensation on stretching tube. No sensation on puncturing large cyst with trocar. Complains only of backache. As contents of the cyst drain, says backache is better. Pain on pulling cyst forcibly. None on clamping cyst. Pinching of the uterus gives pain at times, again does not. Traction on the parietal peritoneum, pain. Rubbing gauze on the parietal peritoneum, pain. Clamping pedicle, no pain; pulling it, pain in the side. Because of severe pain caused by necessary traction on numerous adhesions between the cyst and the parietal peritoneum, general ether anesthesia became necessary, though the patient was willing to proceed fully conscious.

But not only do the above facts hold true for the healthy viscera and peritoneum, but also, contrary to prevalent opinion, for the diseased also. The jejunum, hyperemic and distended from acute stoppage, inflamed appendices, diseased gall-bladders, all have been found insensitive.⁸ Ulcer of the intestine, when uncomplicated, is painless as a rule, whether it be tuberculous, syphilitic or typhoid. The hyperplastic Peyer's patches in the intestines in typhoid fever give no pain. The first evidence of gastric ulcer, especially in young chlorotic girls, may be perforation. In resecting gangrenous intestine in a strangulated hernia no pain was felt in the acutely inflamed intestines. In even so virulent an attack as an acute streptococcus peritonitis, the viscera were found to be as painless to stimulation as normally. After packing for general peritonitis and then withdrawing the gauze adherent to the granulating surfaces of the intestines, there was no pain; the exposed surfaces were, moreover, absolutely insensitive to the cautery, silver nitrate, hydrochloric acid, chromic acid, or the forceps. A tuberculous parietal peritoneum seemed even less sensitive than the healthy membrane.⁹

If then both healthy and diseased viscera are in themselves insensitive to all stimuli of pain, why does man suffer pain in certain abdominal conditions, and how?

It is generally admitted that no stimulation of the vagus below its recurrent branch can produce pain. It is acknowledged that ordinary stimulation of the sympathetic is without effect. Prolonged stimulation of the sympathetic may produce pain, but this, as we shall show, does not obviate the fact that the viscera themselves are insensitive. The impulses causing pain are transmitted through the spinal cord to the brain by the way of the peripheral sensory nerves. The problem of abdominal pain resolves itself, therefore, into a question as to how stimuli from the viscera may reach the pain-conducting tracts of the spinal cord.

Naturally, the first conclusion to be drawn from the results of the studies which prove the intrinsic insensibility of the viscera and the great sensitiveness of the parietal peritoneum is that pain in visceral disease is due to irritation of the terminal ends of the intercostal nerves in the subserosa in this membrane. This is true undoubtedly to some extent, but the position that it is the whole truth, that it is the only source of abdominal pain, is untenable, as we hope to show. Clinical, operative, and experimental studies leave no doubt that traction on the parietal peritoneum from strongly contracting hollow viscera as in appendicular colic, or pull upon the parietal peritoneum from adhesions as after removal of the appendix is prolific of pain. Again, any lymphangitis of the parietal peritoneum, as that following inflammation of the appendix, must cause pain through compression of the ends of the intercostal nerves. Traction on the parietal peritoneum by contracting viscera, adhesions and lymphangitis are then provocative of pain, caused by what we shall term local irritation. But does this theory square with all the clinical facts.

The pain of gastric ulcer at any point does not vary its location when the patient takes a deep inspiration, nor when the stomach is in most active peristalsis, nor when it is empty or full. The pain from strangulation of the small intestines is never primarily below the umbilicus. In strangulated hernia of the small intestine, when we might expect pain at the site of the constriction, the pain again is above the umbilicus. In diarrhea, as long as the pain is above the umbilicus there is no relief, but if the pain descends below the navel, relief by evacuation occurs.¹⁰ Are

these facts explained by a local irritation of the parietal peritoneum? But furthermore:

Let us take into consideration the brilliant researches of Head¹¹ on the subject of referred pain and visceral disease. "If we take the skin and subcutaneous tissues of the abdomen of a patient with gastric ulcer gently between the fingers and thumb, as soon as we pass a line extending from a point about two and a half inches above the umbilicus to the tip of the eighth rib, the patient at once complains of pain. On proceeding from below upwards tenderness is complained of as soon as we pass a line extending from the umbilicus to the top of the tenth rib. The tenderness may be entirely to the left of the middle line of the abdomen or there may be an exactly similar area on the right side. If the blunt head of a pin be placed on this area, the patient cries out that he is being pricked and suffers great pain; he feels as if a bad bruise had been touched. Moreover, the reflexes over this tender area are distinctly increased. Now below this area on the abdomen lies a tender area which frequently appears in stone in the kidney. This area is bounded above by a line from the umbilicus to the top of the tenth rib and thence directly backwards to the first lumbar spine." Now, if this area is tender, no matter how intense the tenderness may be, its upper border never extends beyond this upper limit. If the area of gastric ulcer be tender, its lower border never encroaches on the area found with stone in the kidney. So, it is evident in the first place that these areas of tenderness or hyperalgesia never materially alter or overlap. If we have three adjacent areas, the uppermost and lowest of which are tender, the middle normal region represents a definite area. Now we know that areas on the skin supplied by the nerve roots or intercostal nerves, which supply the deeper structures of the abdominal wall also, overlap considerably. Therefore, if local irritation of the peritoneum were the only cause of abdominal pain, we should not expect this exact definition of the tender areas.

But it is only in favorable cases that the whole area can be defined by the head of a pin, and this fact is of prime importance. In gastric ulcer, instead of the whole tender area, we frequently find "two tender spots, from an inch to an inch and a half in diameter, situated over the costal margin at about the tip of the ninth rib, together with a posterior spot generally situated near the eleventh and twelfth dorsal vertebrae a little to one side of the middle line." Now, if the patient is not touched, but asked

where his pain is situated, he points to one or both of these spots. Even if cutaneous tenderness be absent, the pain is referred to these points. Thus each area has one or more points of greatest tenderness, which points may occur alone, and to which the patient refers the pain he suffers from his disease. So constant are the points or maxima of the area, that given these points, the area can with certainty be outlined.

But not only can these areas be defined through painful sensations elicited by the head of a pin, but they may be actually seen when the eruption of herpes zoster occurs; the areas occupied by the eruption have the same distribution as those tender in visceral disease, they have the same maxima and they do not overlap.

What then is the cause of these tender areas? Clearly they are not due to any known lesion of the cerebral cortex; again the areas of tenderness or of herpes zoster do not correspond in distribution to any peripheral nerves; furthermore, the areas supplied by the spinal nerve roots overlap considerably. But traumatic lesions or organic diseases of the various segments of the spinal cord give areas of tenderness similar to those found in visceral disease. The nerve supply from the spinal segments does not overlap as regards pain. Herpes zoster, which is not only an inflammation involving the post-ganglion,¹² but, as recently shown by Head and Campbell,¹³ also involving the fibres in the spinal cord from the affected ganglion, occupies the same distribution as the visceral areas. Therefore, by exclusion and by positive experimental and clinical data, the areas tender in visceral disease are due to irritation of the various spinal segments, each segment having its peculiar area on the abdominal wall. Therefore, the abdominal viscera being insensitive to any stimulation, the vagus being entirely insensitive to any stimulation, the sympathetic likewise except perhaps on prolonged irritation, the only conclusion possible is that we suffer no pain in the greater part of our viscera but that all pain from visceral disease is suffered in the abdominal wall; that, under some conditions at present not known, stimulations pass through the sympathetic, reach the various spinal segments by way of the rami communicantes, and, by a trick of our brains, are referred to the ends of the peripheral sensory nerves springing from the spinal segments. Visceral pain is an illusion; roughly we have a reflex arc, the afferent sympathetic branch connecting with the posterior ganglion and spinal segment as a center, and the efferent sensory

nerve, forming an arc that is entirely sensory in function; and the tenderness and pain is felt at the end of the efferent sensory branch in the abdominal wall to which it is referred by an incorrect localization just as all the pain of hip-joint disease may be felt at the knee. All abdominal pain, with the exception of that arising from the pelvis and capsule of the kidney, its ureter, a part of the duodenum and common bile duct, whether it be from direct irritation of the parietal peritoneum, or whether it be referred as it largely is, is felt in the abdominal wall through intercostal nerves. Visceral pain is a paradox.

This intimate physiological connection between the sympathetic, the spinal segments, and the peripheral cerebro spinal nerves explains the occurrence of the rigidity of the abdominal muscles in visceral disease, explains the fact that inflammation of the abdominal wall may closely simulate visceral disease,¹⁴ gives a basis and an explanation for the use and benefit of counter-irritation over the abdomen, explains the visceral crises and eruptions of herpes zoster in locomotor ataxia in which we have the well-recognized posterior meningitis and the recently identified degeneration of the visceral branches of the sympathetic,¹⁵ and finally and of prime importance, offers, by its association of tender areas and maximum points of pain, a positive help in the earlier and surer diagnosis of abdominal diseases.

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RESEARCH IN THE ETIOLOGY AND PRODUCTION
OF CANCER.

Read at the Commencement of the Albany Medical College, May 7, 1907.

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The disease, cancer, is not a production of this past century or of the century before, but is of greater age, dating back before the time of Hippocrates. The cardinal symptoms of this grave and non-explainable condition were known to the practitioners of medicine in those ancient times. Following down to the time of Galen, in the third century, we find that he and his followers considered that tumors were an accumulation of one or another of the several humors which were supposed to make up the human body. The "scirrhus" group of these humoral accumulations embraced what we know to-day as cancer. This belief was held for centuries until the circulation of the blood was discovered by Harvey in the early part of the seventeenth century. Then new theories arose to account for the origin of all tumors, so in the place of the old humoral theory, the blood was supposed to be the source of the disease.

Following closely after the discovery of the circulation of the blood, the lymphatic system was demonstrated; the lymph being regarded as a derivative of the blood. Cancer was then ascribed to the degenerated and devitalized lymph.

These theories held sway until Hunter, about 1740, noticed the likeness of the cancerous tissue to that of the normal tissue; so he contended that they arose from some modification or over-production of the formation process. In this way the first step towards the real pathological structure was taken. While arguments were being put forward by the believers of the old humoral theory, and the new structural theory, Broussais brought forth his explanation that all tumors, cancers included, were but forms of organic irritation followed by chronic inflammation. This theory was new and bright, and was at once accepted by all, only to find its downfall when the microscope was brought into action and the true structural formation was discovered. The modern ideas of tumors date from this time.

From the structural aspect arose our present great theories,

namely:—the cell theory and the parasitic theory. From this time there was a great deal written on the cell theory. In 1858, Virchow accumulated all the data and with great skill he worked them into a new cell theory which still remains. He also advanced the new theory of chronic irritation. His theory was "Where a cell arises a cell must have previously existed, just as an animal can only spring from an animal, and a plant from a plant." The great opponent of this theory is that of the microbe or parasitic theory of cancer.

With the microscope, came the more definite description of the individual elements making up the cancer. (The epithelial and endothelial cells were found to be the main constituents in carcinoma. This leads us to look into the sites where the tumors are most commonly found.) According to one of the latest reports, the organs most frequently involved, in the following order are (in the male): the stomach, liver, head, face and neck, mouth, tongue and throat, abdomen and rectum. With the knowledge of the different parts of the body involved, it might be of some interest to know that the geographical distribution varies greatly. (In one hundred thousand deaths the number from cancer varies in different countries. Switzerland comes first with one hundred and thirty, Norway ninety-one, England and Wales eighty-two, Scotland eighty, Germany seventy-two, United States sixty-three and Hungary thirty-seven. In Iceland and Greenland it is rarely found, while in India it is not frequent. In Asia, China shows the highest death rate. Australia's mortality is less than that of England and among savages it is practically unknown.)

Areas in certain countries show a higher percentage of cancer per one hundred thousand than other districts. (In the United States it is most frequent in New England, New York, Pennsylvania, Ohio, Michigan and the Southern Pacific Coast, while areas along the Mississippi Valley and in the Southern States are less affected. This may be due to a racial difference.) It is a noted fact that before puberty, from 12 to 14 years of age, the disease is practically unknown. The question of age in regard to cancer has been well studied. From the age of 15 the disease increases until from 50 to 60, when it reaches its height and gradually recedes again up to 90 at which age cancer is not frequently found as a new

growth. Along the line of age, Tiersch brought out the theory that carcinoma was due to the loss of balance of the structures of the body as age advances. It has been argued that there is a force which regulates cell activity, so the growth and multiplication of the cells go on until the proper amount and structures are produced. Then the activity is restricted within certain limits. In the normal individual, this force is supposed to maintain the equilibrium of the tissues throughout the person's life. Owing to some pathological condition arising, this force is overcome or changed in some way, and the epithelial cells which go to make up the carcinoma spring into activity greater than normal and produce the tumor.

Some authorities consider that this loss of balance of the tissues is caused by injury, from which injured point the tumor arises; or from some long continued irritation, or inflammation: as cancer of the lip in men who habitually smoke clay pipes, cancer of the breast from the incessant rubbing of the corset steels and the malignant growth at the angle of the eye from the pressure of the eye-glasses. It cannot be disputed that these are well known facts in the history of cancer, but many of the leading men on this subject say there must be something more behind this irritation and inflammation to produce the malignant growth.

One of the theories on which a great deal of work has been done, is the "Tumor Germ" theory. The "Tumor Germ" according to Cohnheim, is a group of embryonic cells which in the formation of a child in its early stages, are cut off from their normal situations and connections. These cells remain in an undeveloped and rudimentary state while the rest of the tissue around them goes on to full development and makes normal tissue. This theory did not explain the formation of malignant new growth in callus, or in scar tissue, or in parts after operations and injuries; so added to this is the existence of groups of cells which are formed during the life of the individual. These are known as "post natal" matrices. These "Tumor Germs," or "cell rests," lie dormant until some exciting cause or causes are brought to bear upon them and they break forth into an active proliferation. To prove that these embryonic structures occur, is the fact that frequently embryonic structures are found in the body. Embry-

onic epithelium has been found in the tongue, face, scalp, neck, brain, eye, ovary, and is especially found where the two halves of the body have coalesced in the median line. That cell groups formed during the life of the individual exist, is proven by the fact that in healing wounds, the epithelium of the skin not only sends branches of cells across to form new skin, but also sends branches down into the underlying tissue, especially if this subcutaneous tissue has been injured. So these branches or "buds" of epithelium, being cut off from their normal relations and function, may be so irritated as to form a rapidly growing tumor. That these "Tumor Germs" may remain inactive until aroused by some cause is shown in the fact that normally the teeth do not grow until some physiological force acts as a stimulus and starts the process. (This is also more or less true of the bone, the larynx, the breast, and the generative organs. In the same way as this physiological force acts it is supposed that pathologically the "Tumor Germs" are excited by some like cause. These causes may be considered, as first, heredity, which in this case amounts to a lessened physiological resistance of the tissue; second, age, the loss of force which maintains the state of equilibrium in the human body is lessened as age advances; third, injury which weakens the surrounding tissue and lessens resistance and prohibits the proper nutritions.

The cell inclusion theory may explain how it is that a secondary tumor may not appear until sometime after the primary tumor has been removed. A few of these cells may migrate to a lymph-gland at some distance from the primary seat of the disease, and remain quiescent for some time until some exciting factor suddenly starts its potential activity and the secondary tumor is produced. This theory also shows how two tumors of different structure may arise in the same person at the same time.

Having considered the cell groups of embryonic structure, the likeness of cell division and production in carcinoma to that of normal reproductive tissue should be noted. But first let us consider what a normal and typical cell is.

A cell is described as a nucleated mass of protoplasm. The protoplasm, a soft viscid substance, is found on being very highly magnified to be made up of a fine network of fibres.

There may be also a granular appearance. The nucleus lies in the protoplasm and consists mainly of fine threads. Some of these threads by their standing properties are known as chromogenic filaments or chromosones. These nuclear threads are found in the reproductive tissue to be fewer in number than the other tissue cells of the body. Recent research work on the morphology of cancer cells shows that the chromogenic filaments resemble very closely the filaments in normal reproductive tissue, both as to number and propensity for staining. Also that the method of cell division normal to the calls of the reproductive tissue is found in typical shape in cancer while in innocent or non-malignant growths this form of nuclear division has not been found.

Let us now consider the parasitic theory. As early as 1790, cancer was considered an infectious disease. Cancer is said to be on the increase and there have, according to some authorities, even been epidemics of this disease. The disease is more frequent in some regions than in others and at different times more prevalent in the same region. Plinner states that low-lying, damp districts and especially districts which have both wood and water show a higher rate than other places. Moreover certain houses give a history of repeated cases of cancer. Also malignant new growths have been found in all domestic animals, especially in the horse and dog, and in fact in animals of all species. In trees and plants, malignant growths are found. The turnip especially shows a tumor on its root which is known in this country as "club root," and which has been proven to be positively due to a parasite. The life cycle of this parasite has been followed from the spore to the full grown parasite. It goes through the following stages, namely; the spore, the myxamabae, the granular, the preconjugation, the gametes and the conjugation stages. Then new spores are formed. The spore is supposed to fall into the ground and lie dormant until early summer.

The spore is a pale round body measuring from one micron to two and five-tenths microns in diameter. In it is a small, brown or black granular body, the nucleus, which is about eight-tenths to one and four-tenths microns in diameter. When this spore begins to grow or germinate, it undergoes some division, which has not been traced accurately but appears as

if small bodies were thrown out from it. Ultimately, two or four of these dark bodies are found. The next stage from the spore stage is the formation of pale reddish pear-shaped or oval, non-nucleated bodies. In this stage, there are also found some reddish oval granular bodies. These are known as the myxamaebeae. In this stage dark granules are found and the parasites become motile, just prior to the formation of these granules. These dark granules increase in number and this now is known as the granular stage. The parasites now lie dormant within the cell of the plant. The dark appearance is soon lost and the parasite passes into the post granular stage. They now appear as small pale reddish almost homegenous bodies with well defined outline. A pale nucleus soon appears in the center. This gradually darkens and the preconjugation phase is developed. The next stage is the gametes. "The nucleus disappears and the whole organism assumes an opaque granular aspect." The two cells then adjacent seem to fuse and form one body which is surrounded by a distinct capsule. After a time the body shows appearance of nucleated spores and the entire cycle is complete.

This shows the life from spore back to spore of the Brassicae Plasmodiophora in the turnip. Now let us look at the resemblance to the bodies which are claimed to have been found in cancer. To begin with the bodies in cancer are smaller. The stage from spore to the myxamaebae is not very distinct but the fully developed myxamaebae are found. Next are found the fully developed granules. The post granular phase is found but less abundantly than the others. The bodies of the next stage, the nucleated preconjugate stage, are also fewer in number. Gametes have been discovered. The conjugation stage and the development of the nucleated spore have been pointed out. In the development of the plasmodiophora of cancer it is noted that from the granular stage, the parasites are fewer in number. In this respect they are vastly different from the Brassicae Plasmodiophora. Recent work has been done in trying to grow the plasmodiophora from cancers, which have been removed at operation. This research is not yet completed but several of the stages are supposed to have been distinctly demonstrated. Arguments for the theory have been put forward by facts observed, for instance, that in the study of cancer

extending over a period of twenty years, in the German wards in Buffalo, the number of cancer cases was double those in the native wards. This was due, it is thought, to the fact that the Germans used, to a great extent, uncooked vegetables. For this reason, a very distinguished pathologist gave up eating salads, etc., in which there were uncooked vegetables. It has also been noted that in forest dwellers, the malignant growths are more frequently found on the hands and face than on the protected part of the body. Local contagion of cancer is supposedly pointed out by the fact that one lip comes in contact with the other and a secondary cancer is produced. The same is pointed out in pendulous breasts. The injection of these spores into animals has also produced tumors.

Closely connected with the parasitic theory are the various experiments of inoculation. It has been found that cancer cannot be transmitted from one animal to another of different species, but can be transmitted from animal to animal of the same species. Jensen and Borrel worked along this line and produced well-marked tumors in mice. The work was taken up by our own cancer laboratory at Buffalo and many experiments on mice have been tried. Several of the Jensen tumor mice were brought to this country and inoculations started. The first mice used did not show many tumors but "took" largely in their descendants. This may point to heredity. The animals lost weight and the red blood count was less than normal, while the growth in a few months in many cases became as large as the animal itself. In all mice the inoculations did not produce tumors. Of 1,100 mice inoculated 350 showed tumors, 50 of which recovered spontaneously. In many cases inflammatory nodules were formed but these ulcerated out in two or three weeks. The true tumors only developed after two to four weeks and were more constant.

In a group of eight mice, inoculated with cancer and normal salt solution, in proportion of one to three, after a month three of the eight showed tumors, one the size of a pea, and the other two slightly smaller. On examining these animals after another month, these tumors had practically disappeared. One mouse died of an infection, it is thought. At no time did any of the other mice show any signs of a tumor. The seven remaining mice were re-inoculated with a tumor more virulent

than the first. The three mice which showed tumors on the first inoculation, showed none on the second. Three of the four had fair size growing tumors and the last of the seven died.

This experiment brings us to the fact that the three mice which recovered from the first inoculation, were evidently immune to the second, while the remaining mice, not so immunized, produced rapidly growing tumors. Along this line, it may be said, that work has been done with serum from the mice recovering spontaneously from cancer. The serum from the recovered mice was inoculated into mice with growing tumors with the result that the growth became smaller or disappeared altogether. Then the serum from these mice already cured by serum was injected into other tumor mice with the result of further disappearance of the growth.

Numerous experiments have been tried in other animals but none are as satisfactory as those in the mouse. Dogs have been fed all kinds of malignant tumors but in no case was there any sign of a new growth. In the experimental work upon the mouse it was found by heating the material to a slight degree before inoculating the virulence was increased, but the virulency of all the tumors fell as the temperature, at which the tumor cells die, was reached.

For a number of years the Imperial Cancer Research Fund has been working on the etiology of cancer and has brought out arguments against all theories, namely:—the loss of equilibrium theory fails to explain the circumscribed seat and nature of the primary growth and the power of transmission possessed by malignant tumors. The theory of Cohnheim concerning embryonic rests, and the theory of Ribbert, combining the embryonic rest and the "post-natal" rests, does not explain the transmissibility of the disease. The arguments against the parasitic origin of cancer are, that cancer is a disease common to all animals, yet cannot be transmitted from one species to another, although the lesions are identically the same as to histological structure.

Then again, infectious diseases exist which cannot be transmitted from one species to another yet can be easily transmitted from one animal to another of the same species. This is not true of cancer. Also the fact that no sporadic tumors have

been demonstrated in animals of the same species, although they have been kept in contact for long periods of time with animals suffering from cancer.

The Imperial Cancer Research Fund also states a number of requirements necessary before any theory can be considered acceptable. "(1) That the primary seat of a cancerous growth is a circumscribed area. (2) That a cancer is relatively independent of its surroundings. (3) That cancer cells are capable of continuous growth. (4) That infiltration and destruction are characteristic of cancer. (5) That cancers are capable of producing metastatic deposits. (6) That cancer appears with increasing frequency as age advances. (7) That cancer cells show a differentiation whenever they appear. That is, the type for any given tumor is always the same. (8) That cancer is within limitation capable of transmission."

As none of the theories yet advanced meet all the requirements set forth, the real cause of cancer is still obscure. The work done so far has been very extensive, and along a great many different lines and more work is yet to be done. It is like clearing away a heavily timbered forest; the underbrush and trees must be cut down and the roots either burned or blown out before the soil is ready for the seed to be sown and the harvest reaped. So with the theories and work done so far on cancer the field has to be cleared and our present knowledge of the disease will eventually, by a process of elimination, be given its proper standing, and before long, we hope that the true cause of cancer will stand forth like a shining beacon to enlighten the whole medical profession.

Editorial

Under the reign of the Ommiades, the studies of the Moslems were confined to the interpretation of the Koran, and the eloquence and poetry of their native tongue. A people continually exposed to the dangers of the field must esteem the healing powers of medicine, or rather of surgery; but the starving physicians of Arabia murmured a complaint that exercise and temperance deprived them of the greatest part of their practice.

EDWARD GIBBON.

The Decline and Fall of the Roman Empire.

The Teaching of Gynecology Teachers, who have at their command abundant clinical and pathologic material, can afford students unusual opportunities for the acquirement of knowledge. Properly selected cases from a clinical, pathologic and therapeutic view give good opportunity for the demonstration of disease. Few, however, have such facilities and few use their material to its utmost. In such a subject as Gynecology, where there is little opportunity for visual demonstration of lesions and where proficiency in the art must advance coincidentally with education of the sense of touch, it is important that all means of didactic demonstration and illuminating illustration be exhausted, before the beginner is brought to examination of the patient. The mind of the student must be prepared to translate the results of his examination and he must have a mental picture of the pathologic processes of the disease. For this reason teachers of Gynecology have brought every means to aid this end. Plaster casts, clay models, pathologic specimens and charts have their place in the education of the gynecological class. It remained for Sampson to emulate in originality the fathers of Gynecology, and, as they introduced new methods into the practice of abdominal surgery, so he has introduced a new idea into its teaching.

Sampson has arranged a book* in the form of a series of studies in Gynecology embracing the various lesions and conditions of disease. The etiology and course of each disease are demonstrated by means of illustrations and charts, while large margins and blank pages are left for the student's notes. The text of the book consists of a small amount necessary to explain the illustrations. The studies are presented in the form of illustrated problems and the final diagnosis is left to the processes of the student's mind, which is, however, by the illustrations bearing explanatory legends and accompanied by questions. The problems are studied by the class and are discussed before presenting patients for clinical demonstration. The subject matter of the book is so arranged that each advance is a natural outgrowth of what preceded it. The illustrations are clear and self-explanatory. The normal anatomy of the pelvic and genital organs are well shown by drawings before the student is taken to conditions of disease. It is a matter of no surprise to those

*Sampson, J. A., *Studies in Gynecology*, Fort Orange Press, 1907.

acquainted with Dr. Sampson's investigations on Cancer of the Uterus to find the section on that subject most extensive and excellent. The book will be a useful aid to teachers of Gynecology and will be invaluable to students. It will help them to become good diagnosticians, without which they cannot be wise counselors.

ELLICE McDONALD.

Little Biographies

JOHANNES M. MÜLLER.

JOHANNES M. MÜLLER, one of the greatest biologists the world has ever known, was born in Coblenz on the 14th of July, 1801. His parents, recognizing the great value of a primary education, secured for him the best instructors that were obtainable at that time.

At eighteen years of age he entered the University of Bonn with the idea of studying theology, but almost immediately after matriculation he became deeply interested in the study of medicine. Under such teachers as Mayer and Weber in anatomy, Norse in physiology, and later Walther, Bischoff, Kastner and Noegerath in science, Calker and Brandis in physiology, he became a most diligent student and won the faculty prize with his dissertation, "Concerning the Respiration of the Fœtus," which is still considered one of the best prize essays ever written.

Of special significance in his further development was his association with Rudolphi in Berlin where Müller spent some months preparing for his Stats-Examination. From Rudolphi he received the stimulus for anatomical and physiological research work. At twenty-three years of age he was appointed "privat-docent" in the University of Bonn, and a few years later became a full professor in that institution.

His fame as a teacher and his scientific accomplishments were widespread, and in 1833 he succeeded Rudolphi as Professor of Anatomy and Physiology and Director of the Anatomical Theater and of the Anatomical Zoölogical Museum in the University of Berlin, which position he honored until his sudden death, April 28, 1858, at the age of fifty-seven.

It is almost impossible to believe that any mortal could accomplish in so short a time the tremendous amount of work that he did.

His published works include the results of investigations in human and comparative anatomy, physiology, histology, pathological anatomy and many other branches of biology. Besides he had the management of the largest anatomical museum in the world, containing some 7,000 specimens when he became director, and largely through his own undivided efforts this number was doubled during his directorship of twenty-five years.

It is almost impossible in the space at our command to give even the slightest idea of Müller's work.

In physiology and physiological chemistry among other important discoveries might be mentioned his investigation of the "Phantastic Vision Phenomena," the first proof of Bell's theory by experiments on frogs, the first precise presentation of the theory of reflex movements, the sympathetic and the laws of excentric sensations.

He taught us concerning the circulation of lymph in the amphibia and brought into general use the idea of Hewson on the chemistry of the blood which previously had not received proper notice. He discovered chondrins.

In pathological anatomy he founded the present notions of the histology of tumors, although his great work on this subject remained uncompleted.

He first described the histological differences of enchondromata and osteoids.

In descriptive human anatomy he pointed out the arterial helicinae and published his researches on erectile organs, the musculature of the intestinal tract, the otic ganglion and other various subjects too numerous to mention.

With Purkinje he was one of the first to use the microscope in studying tumors. Henle and Schwann, under his direction, did most of their best work in his laboratories.

Müller was the originator of the term "connective tissue." Independent of Bowman he discovered the capsule which bears the latter's name. In embryology also his work was noteworthy, and we are all familiar with the term "Müllerian ducts."

Together with R. Owen, Müller must be considered the founder of comparative anatomy, and his "Hauptwerk" on the comparative anatomy of the "Myxinoiden" will remain a classical model for all time. In the course of twenty-five years Müller published over 200 scientific papers, most of them important monographs.

On examination of the vast amount of work which he accomplished, one is astonished, and his great versatility has hardly ever been equaled. Nothing seemed too difficult for him to undertake.

As a teacher Müller was unusually attractive and stimulating, although the gift of individual instruction was lacking and it was difficult to approach him. With magic power he attracted the minds of his superior pupils. About him as students were clustered men who have since become famous—Schwann, Henle, Miescher, Bruecke, Du Bois-Raymond, Virchow, Von Helmholtz, Claparide, Reichert, Lachmann, Frosabel, Lieberkühn, Remak and others. Through them the influence of a master mind is still felt.

H. JUDSON LIPES.

Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR JULY, 1907.

Deaths.

	1902	1903	1904	1905	1906	1907
Consumption.	17	13	18	14	22	11
Typhoid fever	1	1	1	1	3	2
Scarlet fever	0	0	1	0	0	0
Measles.	2	2	0	0	0	0
Whooping-cough	1	1	0	1	2	3
Diphtheria and croup....	1	0	2	0	2	4
Grippe.	0	0	0	0	0	0
Pneumonia	4	15	9	0	2	3
Broncho-pneumonia.	0	1	2	2	1	0
Bright's disease	7	12	15	19	11	16
Apoplexy	4	6	8	12	11	8
Cancer	5	10	7	9	8	6
Accidents and violence ..	12	11	9	11	11	14
Seventy years and over...	19	24	24	29	24	35
One year and under.....	26	48	43	29	27	28
Total deaths	135	177	169	156	149	172
Death rate	15.88	20.83	19.89	18.36	17.53	20.24
Death rate less non-residents.	13.65	18.36	18.00	16.59	16.12	17.88

Deaths in Institutions.

	1902		1903		1904		1905		1906		1907	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital.	4	8	8	13	15	6	9	9	13	5	14	10
Albany Orphan Asylum.	0	0	0	0	0	1	0	0	0	0	0	0
County House.	1	2	5	2	5	0	3	0	0	2	2	1
Little Sisters of the Poor.	0	0	0	0	0	0	0	0	0	0	2	0
Homeopathic Hospital..	2	1	1	2	4	2	0	0	1	1	3	0
Hospital for Incurables.	0	0	0	0	0	0	1	0	1	0	0	0
House of Good Shep- herd.	1	0	0	0	1	0	0	0	0	0	0	0
Home for Friendless..	0	0	0	0	0	0	1	0	1	0	1	0
Public Places.	0	6	5	2	1	2	0	0	0	1	0	4
Sacred Heart Convent.	0	0	0	0	0	0	0	0	0	0	1	0
St. Francis De Sayles Orphan Asylum.	0	0	3	0	1	0	0	0	0	0	0	0
St. Margaret's Home..	1	1	3	1	4	3	6	2	0	0	0	0
St. Peter's Hospital...	2	1	2	1	4	1	2	3	3	3	7	3
St. Vincent's Female Orphan Asylum.	0	0	0	0	1	1	0	0	0	0	0	0
Home for Aged Men..	0	0	0	0	2	0	0	0	0	0	0	0

Births at term. 71

Marriages 68

Still births. 3

Premature births. 2

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation, there were two hundred and thirty-five inspections made, of which one hundred and fifty-five were old buildings and eighty new buildings. There were sixty iron drains laid, thirty-one connections to street sewers, thirty-five tile drains, three urinals, forty-five cesspools, sixty-four wash basins, eighty-four sinks, fifty-four bath tubs, forty-three wash trays, one butler's pantry sink, four trap hoppers in yard, one hundred and nine tank closets, one shower bath. There were one hundred thirty-two permits issued, of which one hundred and sixteen were for plumbing, and sixteen for building purposes. There were thirty plans submitted, of which fourteen were of old buildings and sixteen of new buildings. Seven houses were tested on complaint, five with blue, red and two with peppermint and there were sixteen water tests made. Fifty-one houses were examined on complaint and seventy-three re-examined. Twenty-two complaints were found to be valid and twenty-nine without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1903	1904	1905	1906	1907
Typhoid fever	3	4	8	5	8
Scarlet fever	7	7	0	4	2
Diphtheria and croup.....	13	8	6	29	44
Chickenpox	1	0	0	0	1
Measles	38	1	4	10	11
Whooping-cough	0	0	0	7	0
Consumption	1	2	2	2	11
Totals.	63	22	20	61	77

Contagious Diseases in Relation to Public Schools.

None reported.

Number of days quarantine for diphtheria:

Longest..... 35 Shortest..... 6 Average..... 18 9-19

Number of days quarantine for scarlet fever:

Longest..... 45 Shortest..... 27 Average..... 34 2-5

Fumigations:

Houses..... 48 Rooms..... 135

Cases of diphtheria reported..... 44

Cases of diphtheria in which antitoxin was used..... 43

Cases in which antitoxin was not used..... 1

Deaths after use of antitoxin..... 4

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906	1907
Initial positive.....	14	10	2	4	20	28
Initial negative.....	15	15	16	15	12	39
Release positive.....	17	10	1	5	3	25
Release negative.....	23	12	5	4	88	96
Failed	4	2	....	....	31	5
Totals	73	49	24	28	154	193

Examinations for tuberculosis:

Initial positive..... 1

Initial negative..... 2

MISCELLANEOUS.

Inspections of mercantile establishments..... 0

Mercantile certificates issued to children..... 29

Factory certificates issued to children..... 38

Children's birth records on file..... 67

Number of written complaints of nuisances..... 109

Privy vaults..... 13

Plumbing 41 || Other miscellaneous complaints..... | 55 |
Total number of dead animals removed.....	853
Cases assigned to health physicians.....	64
Calls made.....	203

BUREAU OF MARKETS AND MILK.

Milk dealers found to be out of business.....	1
Wagons and milk in clean condition.....	28
Wagons and milk in unclean condition.....	0
Ice on cans.....	28
Butter fats below 3%.....	0
Butter fats from 3 to 3.5%.....	7
Butter fats from 3.5 to 4%.....	19
Butter fats over 4%.....	2
Solids below 12%.....	1
Solids from 12 to 12.5%.....	3
Solids from 12.5 to 13%.....	13
Solids over 13%.....	11
Meat condemned.....	0

BUREAU OF MILK.

BUTTER FATS.						SOLIDS.			
No.	Specific Gravity	Under 3%	3 to 3.5%	3.5 to 4%	Over 4%	Under 12%	12.5 to 13%	Over 13%	12 to 12.5%
5.....	35.1	..	..	I	..	..	..	I	..
8.....	32.1	..	I	..	..	I	..	..	..
9.....	35.8	..	..	I	..	..	..	I	..
11.....	34.2	..	..	..	I	..	..	I	..
12.....	33.1	..	..	I	..	..	I	..	..
21.....	34.2	..	..	I	..	..	I	..	..
22.....	32.9	..	..	I	..	..	I	..	..
32.....	33.1	..	..	I	..	..	I	..	..
33.....	33.1	..	..	I	..	..	..	I	..
36.....	34	..	..	I	..	..	..	I	..
38.....	33.1	..	..	I	..	..	I	..	..
41.....	35.3	..	I	..	..	..	..	I	..
48.....	32.1	..	I	..	..	..	..	..	I
54.....	33.1	..	..	I	..	..	I	..	..
80.....	32.1	..	..	I	..	..	I	..	..
96.....	34.2	..	..	..	I	..	..	I	..
110.....	34.2	..	I	..	..	..	..	..	I
128.....	32.1	..	..	I	..	..	I	..	..
147.....	36.4	..	I	..	..	..	..	I	..
148.....	34.2	..	..	I	..	..	I	..	..
152.....	32.1	..	I	..	..	..	..	..	I
162.....	36.2	..	..	I	..	..	..	I	..
165.....	32.1	..	..	I	..	..	I	..	..
170.....	32.1	..	..	I	..	..	I	..	..
172.....	34.2	..	..	I	..	..	..	I	..
191.....	35.3	..	I	..	..	..	..	I	..
193.....	35.3	..	..	I	..	..	..	I	..
195.....	33.1	..	..	I	..	..	I	..	..

Medical News

Edited by Arthur J. Bedell, M. D.

ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR THE MONTH OF JULY, 1907.—Number of new cases, 132, *classified as follows*: Dispensary patients receiving home care, 2; district cases reported by health physicians, 14; charity cases reported by other physicians, 65; moderate income patients, 51; old cases still under treatment, 60; total number of patients under nursing care during the month, 192.

Classification of diseases (new cases): Medical, 34; surgical, 14; gynecological, 3; obstetrical, 42 mothers and 38 infants under professional care; skin, 1; 6 contagious diseases in medical list; transferred to hospitals, 13; deaths, 9.

Special Obstetrical Department.—Number of obstetricians in charge of cases, 1; medical students in attendance, 2; Guild nurses, 5; patients, 2; number of visits by attending obstetricians, 1; by the medical students, 16; by the Guild nurses, 22; total number of visits for this department, 39. Visits of Guild nurses (all departments): Number of visits with nursing treatment, 1,158; for professional supervision of convalescents, 230; total number of visits, 1,388. Five graduate nurses and two assistant nurses were on duty. Cases were reported to the Guild by three of the health physicians and by thirty-six other physicians.

THE SEVENTH ANNUAL CONFERENCE, STATE SANITARY OFFICERS, will be held in Convention Hall, Buffalo, New York, on Wednesday, Thursday and Friday, October 16th, 17th and 18th.

In connection with the Conference and during the whole of that week there will be held the first demonstration of the Department's Traveling Tuberculosis Exhibition.

This tuberculosis exhibition will be similar in many respects to the one shown at last year's conference, but will have many new features. It will contain exhibits from all the large and some of the smaller cities and villages of the State. These will illustrate what is being done in all parts of the State for the prevention of this disease.

It is expected that every phase of antituberculosis work can be illustrated and yet not have to ask for exhibits from institutions and municipalities in other States.

Every municipality and every institution or society which is carrying on antituberculosis work in any part of the State is earnestly invited to contribute photographs, charts and tables showing the operations, results, statistics and methods of work to this exhibition in order that the State Department of Health's exhibition may be complete. All the large tuberculosis sanitariums have signified their willingness to contribute exhibits illustrating their work.

In addition, there will be shown a series of models of slow and rapid sand filters and of a septic tank and contact beds. There will also be on exhibition a series of charts and tables showing the incidence of typhoid fever in the different municipalities in the State; maps showing the water sheds of the State and similar illustrative material.

The State Hygienic Laboratory will have its traveling laboratory outfit and other outfits, apparatus, etc., on view.

Wednesday, October 16, 2 p. m.—Introduction, Dr. Ernest Wende, Health Commissioner of Buffalo; Address of Welcome, Hon. J. N. Adam, Mayor of Buffalo; Address of Welcome, W. H. Gratwick, Esq., President Chamber of Commerce, Buffalo; Opening Address, Dr. Eugene H. Porter, State Commissioner of Health; Address, Hon. Charles E. Hughes, Governor State of New York. Reception by the Governor.

Wednesday Evening, October 16, 8 p. m.—The Dissemination and Control of Tuberculosis, Prof. V. A. Moore, N. Y. State Veterinary College, Ithaca, N. Y.; The Early Diagnosis and Treatment of Tuberculosis, J. H. Pryor, M. D., Trustee N. Y. State Hospital for Incipient Pulmonary Tuberculosis, Buffalo, N. Y.; The Duty of the Municipality Toward the Tuberculous, Dr. Edward Devine, Secretary Charity Organization Society, New York City.

Thursday Morning, October 17, 9:30 a. m.—Sanitary Inspection of Wells and Their Surroundings, Mr. L. M. Wachter, Sanitary Chemist State Hygienic Laboratory; Sewage Disposal for Institutions and Small Communities, Mr. Theodore Horton, Consulting Sanitary Engineer, State Department of Health; Law Relating to Sewerage Systems, Mr. A. H. Seymour, Secretary State Department of Health.

Thursday Afternoon, October 17.—It is expected that arrangements will be made so that the entire body of members of the Conference can be transported to Niagara Falls for the afternoon, with a dinner at six o'clock at one of the large hotels. At the close of the dinner addresses will be given as follows: Labor Legislation in its Relation to Public Health, by the State Commissioner of Labor; Law Relating to Nuisances, Senator W. J. Tully, Corning, N. Y.

Friday Morning, October 17, 9:30 a. m., has been reserved for the presentation of papers by the members of the Department staff on subjects relating to the practical work of the local health officials. Amongst other papers, Dr. J. T. Wheeler, Director of the Division of Communicable Diseases, will talk on "Quarantine in Communicable Diseases." Dr. H. D. Pease, Director of the State Hygienic Laboratory, will talk on the "Use of the State Laboratory by the Health Officers." There will also be a series of short talks on the various aspects of Medical School Inspection.

Friday Afternoon, October 18, will be reserved for a trip to Buffalo Stock Yards and Packing House District, under the direction of Dr. Benj. P. Wende, Inspector in charge of the Federal and Meat Inspections.

Friday Evening, October 18, it is intended to have a symposium on Pure Milk and What Must be Done to Obtain It.

A prominent scientist will give a résumé on what constitutes pure milk.

The following well-known health officers and physicians have been invited to briefly present their views on The Work of the Local Health Authorities in the Pure Milk Campaign: Dr. Thomas Darlington, Health Commissioner, New York City; Dr. Ernest Wende, Health Commis-

sioner of Buffalo; Dr. Henry R. Hopkins, of Buffalo; Dr. George W. Goler, of Rochester.

Dr. Ellis M. Santee, of the Federal Department of Agriculture, will be invited to speak of the activities of the Federal Government in this work.

ELLIS HOSPITAL, SCHENECTADY.—Drs. John F. McEncroe and John A. Heatly have resigned from the medical staff of Ellis Hospital. Drs. F. C. Reed (A. M. C., 1902) and Dr. W. L. Huggins (A. M. C., 1899) have been appointed members of the surgical staff, and Dr. J. L. Schoolcraft (A. M. C., 1879) has been made consulting physician and surgeon.

THE PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION, Dr. Herbert L. Burrell, of Boston, is now preparing the manuscript of a pretentious work on surgery, which Blakiston, of Philadelphia, will bring out. The book is to be complete in one royal octavo volume, well illustrated, and, needless to say, well and authoritatively written.

AN INTERNATIONAL CONGRESS on Psychiatry, Neurology, Psychology, and Nursing of the Insane will be held at Amsterdam, September 2-7, 1907. The third program has been issued and shows promise of a very instructive meeting.

GLASSES FOR SCHOOL CHILDREN.—The New York Board of Education has decided to request the Department of Health to make an expert examination of the eyes of all the children in the public schools to determine the exact number for whom glasses ought to be provided. The estimate of 36,000 has been considered too low and the thoroughness of former examinations inadequate for proper treatment.

PERSONALS.—Dr. WILLIS G. MACDONALD has returned from Europe.

—Dr. LEO H. NEUMAN has returned from an automobiling tour through Germany and Switzerland.

—Dr. CHARLES F. CLOWE (A. M. C., 1888), of Schenectady, has returned from England.

—Dr. THOMAS CARNEY (A. M. C., 1902), of Schenectady, has been elected captain of Company E, Second Regiment, N. G. N. Y.

—Dr. F. G. SCHAIBLE (A. M. C., 1905) has been appointed assistant physician in the Manhattan State Hospital on Ward's Island.

—Dr. F. W. LOUGHRAN (A. M. C., 1890) is editor of *Pediatrics*. His address is 742 Prospect ave., New York City.

—Dr. F. H. HURST (A. M. C., 1895) has moved from Oneonta, N. Y., to Guilderland Center, N. Y.

—Dr. EDWARD MULTIMORE (A. M. C., 1905) has been appointed assistant physician at the State Hospital for the Insane at Central Islip, N. Y.

MARRIED.—Dr. ROSCOE CONKLING WATERBURY (A. M. C., 1906) and Miss ADA WILD, of Averill Park, N. Y., were married at St. Peter's Church, Albany, August 6th. Dr. and Mrs. Waterbury will be at home in Kinderhook, N. Y., where the doctor has a growing practice.

DIED.—Dr. LOUIS A. HARRIS (A. M. C., 1884) died at Newburgh, N. Y., August 18, 1907.

In Memoriam

ROBERT O. CRAIG, M. D.

Dr. Robert O. Craig, who graduated from the Albany Medical College in 1855, died at his home in Janesville, Minn., July 13, 1907, after a long illness due to intestinal cancer.

Dr. Craig was born at Ogdensburg, N. Y., June 8, 1834, and at the time of his death was seventy-three years of age. He was educated in the public schools of his native place. Shortly after graduating in medicine he entered the military service, as surgeon. During his service in the army he was stationed much of the time on the Pacific coast. At the close of the Civil War he was mustered out, and about 1865 settled at Janesville, where he practiced his profession for more than forty years. On December 13, 1870, he married Anna M. Lamb, who died seven years ago. He leaves no children. A brother, W. B. Craig, formerly of Mankato, and a sister, Miss Mary E. Craig, both of Ogdensburg, N. Y., two nephews, Leslie W. Craig, also of Ogdensburg, and Zina W. Craig, of San Pedro, California, survive him.

Dr. Craig's army record was one of intense activity. As a physician and surgeon he sustained close relations with the military leaders of the stirring war period. During the later years of his life he was patriotically devoted to the Grand Army organization. He took great interest in its welfare and several times served as its commander. He also served two terms in the State Senate and was president of the Waseca County Bank. Dr. Craig's neighbors speak in high eulogy of his character. In thought and word and deed he reflected the broad-minded, public-spirited, conscientious man. He was a man of few words. He kept his own counsels, but when necessity required he stood unswervingly for what he considered right and what he believed to be for the best interests of the people. Occupying various positions of honor and trust he invariably protected the public interest. Yet he was sufficiently broad-minded to withhold nothing that would in any manner contribute to the general welfare and well being. This trait was fully exemplified many times during his connection as a member with the board of education. It was fully brought forth while a member of the State Senate, where he was recognized on account of his sound judgment and wide information. He was recognized as one of the leading members of that body during each of the terms he served. He was one of the best informed men of the times, and his culture and learning brought him before the people as one of the prominent men of the State. His many acts of kindness and charity were performed in a quiet way, are known to many, but never through publicity on his part. They stand out as marks of his generous spirit which have left their impress for all time.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS.

Biographic Clinics. Vols. IV and V. Essays concerning the Influence of Visual Function, Pathologic and Physiologic, upon the Health of Patients. By GEORGE M. GOULD, M. D. Philadelphia: P. Blakiston's Son and Co., 1906-7.

These volumes continue Dr. Gould's previous work along the same lines. Volume IV contains chapters on Progress, the Cause, Nature and Consequences of Eyestrain, the Etiology of Astigmatism, the Eyestrain Origin of Epilepsy, and Clinics on Balzac, Tchaikovsky, Flaubert, Lafcadio Hearn, and Berlioz. Volume V contains a large number of case reports of single instances of misinterpreted eyestrain, and chapters on the relation of eyestrain to suicide, crime, migraine, etc.

The volumes are in Dr. Gould's usual vivid style, and contain much of interest. They differ from those previously issued in that they give less space to the clinics and more to the recording of individually observed patients. From the practical point of view this is very satisfactory, for, while the clinics are extremely interesting from the point of view of literature, and of speculation based upon historical documents, it is to be remembered that Dr. Gould's object is to impress upon the profession the seriousness of eyestrain. This can be done much better by the presentation of the histories of living patients seen by Dr. Gould himself, or recorded by other trustworthy observers. If the profession does not realize the importance of eyestrain by this time it is certainly not Dr. Gould's fault. We only fear that he goes too far in his claims regarding the remote effects of eyestrain, and that his too great insistence in some lines will lead to the alienation of many physicians rather than their conversion to his views. Regarding epilepsy, for example, his statements are much too sweeping. Some patients with epilepsy are markedly benefited by the correction of errors of refraction, as the reports of Reik and others show. The majority of epileptics are not benefited in the least by properly fitting glasses. The article of Dr. Spratling, very unfairly criticized by Dr. Gould, shows that glasses fitted by Dr. Gould himself failed to have any effect on most of the epileptics treated. The same remarks apply to migraine, the relation of which to eyestrain is undoubted in some instances, but not in others. Dr. Gould's biographic clinics have done good work in bringing the profession to a full realization of the importance of eyestrain. Many physicians, a great many more than Dr. Gould realizes, appreciated eyestrain and the secondary changes due to it before Dr. Gould began to write. The last volumes seem to be an indictment of Dr. Gould's fellow ophthalmologists for their failure to agree with his views, rather than a criticism of the general practitioner for a lack of appreciation of the effects of eyestrain.

G. B.

International Clinics. A Quarterly of illustrated clinical lectures and especially prepared original articles. Edited by A. O. J. KELLY, A. M., M. D. Vol. IV. 16th Series, 1906. J. B. Lippincott Co., Publishers.

Among the many readable articles in this volume of *International Clinics* we would mention the following:

Electrotherapeutics, by JOHN H. W. RHEIN, consists of a résumé of the principles of electricity, the various kinds of currents, their mode of generation and application, together with several pages devoted to electrotherapy, both general and special. The article has the advantage of being free from unnecessary technicalities.

The Non-operative Treatment of Renal or Urethral Calculi Causing Colic, by HOWARD LILLIENTHAL. A very instructive paper in which the writer advocates the following lines of treatment:

I. For immediate relief of the pain.

- (a) Pure chloroform 3j; by mouth, to be quickly swallowed and followed by a small draught of water.
- (b) Place the patient in a full hot bath.
- (c) Invert the patient and perform the brisk bimanual massage over the affected kidney.

II. To prevent recurrence of attacks.

- (a) Have the patient drink large quantities of distilled water within a short space of time, once or twice a day.
- (b) Cases of turbid urine, Hexamethyle, namine gr. v. t. i. d. If hematuria occurs, Salol gr. v. t. i. d. should be substituted.

Etiology and Treatment of Chronic Constipation, by J. DUTTON STEELE. The author believes that present-day methods of food preparation and cooking favor atonic constipation, the prime causes of which are too perfect digestion and absorption of food, the poor growth of the normal bacteria of the bowel and the consequent lack of the products of fermentation which are the normal and necessary stimulants of peristalsis. The treatment consists in regulating the diet so that it will contain sufficient cellulose to furnish ballast for the intestinal contents and at the same time provide food for the intestinal bacteria. Steele has found Agar-agar, a preparation of Japanese seaweed, a valuable addition to the diet, as it is voluminous, rich in water; the cellulose is in such a form that it will not be digested and at the same time unirritating to the mucous membrane.

H. D. C.

Surgical Diagnosis. By DANIEL N. EISENDRATH, M. D., Adjunct Professor of Surgery in the Medical Department of the University of Illinois (College of Physicians and Surgeons). Octavo of 775 pages, with 482 original illustrations, 15 in colors. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$6.50 net; Half Morocco, \$8 net.

That there is need of a work in the English language on surgical diagnosis is shown by the fact that the works of this character most

frequently used are translations from the German. In the above volume the author has endeavored to present in as clear, concise and yet exhaustive fashion as possible the essential clinical diagnostic features of surgical diseases. The diagnosis of diseases of the eye, ear, nose, throat and skin have been omitted because they are fully considered in special treatises.

The volume, which contains 776 pages of subject-matter and 482 illustrations, is subdivided into eight chapters. In Chapter I surgical affections of the head are considered, the injuries of the scalp, skull and brain being especially well presented. Chapter II deals with surgical affections of the neck, the discussion of tumors being especially satisfactory. Chapter III is devoted to the surgical diseases of the thorax. Chapter IV is perhaps the most satisfactory in the entire volume and presents an extremely exhaustive discussion of the diagnosis of surgical conditions within the abdomen. Surgical diseases of the extremities is the subject of Chapter V, and this chapter is next in excellence to Chapter IV. Diseases and injuries of the spine are presented in Chapter VI. Chapter VII, though brief, is an important one, dealing with post-operative complications. The volume closes with a brief chapter on the methods of examination.

It will thus be seen that the author has covered the field in a most painstaking and systematic fashion. In the presentation of each topic the different possible affections are briefly discussed, after which the differential diagnosis of the conditions enumerated is concisely stated. There is wonderfully little repetition in the volume and no attempt to attain size by the introduction of superfluous subject matter.

The illustrations in which the volume abounds cannot be too highly praised. Many of them are reproductions of photographs of illustrative cases, while others are schematic or diagrammatic. Illustrations of the methods of aspiration of the chest and pericardium, as well as many illustrations of correct methods of palpation of the different organs, add much to the value of the work. The reproduction of the illustrations is splendidly done, as is the entire workmanship of the volume, which reflects great credit upon the publishers.

We feel that it is not too much to say that this volume is the best of its kind in the English language and one which will be of the greatest service not only to the surgeon, but especially to the general practitioner whose lot it is to usually see the surgical diseases in their earlier stages.

A. W. E.

A Treatise on Orthopedic Surgery. By ROYAL WHITMAN, M. D., Instructor in Orthopedic Surgery in the College of Physicians and Surgeons, New York; Chief of Orthopedic Department in Vanderbilt Clinic, New York. Third edition, revised and enlarged. Octavo, 900 pages, with 554 illustrations, mostly original. Cloth, \$5.50 net. Philadelphia and New York: Lea Brothers & Co., 1907.

That a third edition of this work should be required within such a comparatively short time is perhaps the best evidence of the high appre-

ciation generally accorded it by the medical profession. The present volume has been somewhat enlarged and new illustrations added with the view of making it as complete and up to date as possible. All phases of orthopedic surgery are comprehensively considered, and so far as possible it has been the author's aim to discuss the tuberculous and non-tuberculous diseases of the most important bones and joints in succeeding chapters in order that the conditions might be contrasted as sharply as possible.

The first four chapters are devoted to the diseases and deformities of the spine, tuberculosis and lateral curvature naturally receiving most attention. Following these are chapters on the general subject of tuberculous and non-tuberculous diseases of bones and joints, followed by special chapters on tuberculous and non-tuberculous affections of the hip and knee. Diseases and injuries of the ankle and shoulder joints are chapters of great practical importance because of the great frequency of their occurrence. Deformities of the upper and lower extremities, including congenital and acquired affections leading to general distortions, congenital dislocation of the hip, coxa vara, genu varum, genu valgum and various other conditions are exhaustively considered. Two very interesting and valuable chapters are devoted to the diseases of the nervous system as related to orthopedic surgery. An extremely good chapter on torticollis and four chapters on the disabilities and deformities of the foot complete the volume.

Containing as it does 871 pages of subject matter and 554 illustrations, it will easily pass the most exhaustive work upon this subject in the English language. The volume is essentially practical in every detail. Each subject is presented in a clear, concise manner, and wherever practicable profusely illustrated, so that a very considerable portion of the department of orthopedic surgery is brought within the reach of the general practitioner of medicine, to whom this volume cannot be too highly recommended. One great reason why there are so many crippled and deformed individuals is because the average medical man knows but little of orthopedic surgery and fails to recognize the beginnings of serious trouble. In publishing this volume we feel that the author has done much for the cause of general humanity and we are confident that it will be well received.

A. W. E.

Manual of Operative Surgery. By JOHN FAIRBAIRN BINNIE, A. M., C. M. (Aberdeen), Professor of Surgery, Kansas State University, Kansas City; Fellow of American Surgical Association; Membre de la Societe Internationale de Chirurgie; third edition, revised and enlarged, with 678 illustrations; a number of which are printed in colors. Published by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, 1907.

In reviewing this the third edition of a "Manual of Operative Surgery," by Prof. John F. Binnie, of the Kansas State University, one is immediately struck with the compactness of the volume in its entirety, as well as by the arrangement of the parts, in that there is no compli-

cated classification and no wasting of words in the description of each separate chapter; especially is the index to be commended because of its fullness, as in Chapters IV and V of Part 7, wherein is given a short résumé of the various principles of plastic surgery, in terse, plain language, and in Chapter V, the preparation of ligatures and sutures.

It is not given to every man to perform major surgery, but the practitioner who is distant from trained surgical aid, by means of this little book, can post himself quickly and surely for such operations as he may be called upon to do without aid other than is to be utilized in the household where the operation is to be done.

For the student who has listened to didactic lectures in full, and has posted himself from the larger and more ample works of surgery, this little book is an invaluable aid for a quick review.

To the author we extend our congratulations upon the necessity of editing a third edition, and we trust that the book may go to many more editions, each containing the advances up to date.

The book contains nearly seven hundred illustrations of the various operations, and many of these are in colors, to show the veins, arteries and nerves encountered during the various operations.

J. N. VANDER VEER.

Diseases of the Lungs. By ROBERT H. BABCOCK, A. M., M. D. New York and London: D. Appleton and Company, 1907.

This work is a companion to Dr. Babcock's well-known book on diseases of the heart and, like it, is destined, we believe, to a wide popularity. The subject is considered in three divisions—diseases of the bronchi, diseases of the lungs, and diseases of the pleura. The classification followed presents nothing unusual. Ten chapters are devoted to diseases of the bronchi, twenty-four to diseases of the lungs, and three to diseases of the pleura. The section on bronchial diseases discusses the various forms of bronchitis, bronchiectasis, asthma, and bronchial stenosis and perforation. The chapters on the lungs cover circulatory changes, lobar and broncho-pneumonia, chronic interstitial pneumonia, the pneumokonioses, emphysema, atelectasis, tuberculosis, syphilis, the rarer parasitic conditions, and malignant growths of the lung. The chapters on the pleura are devoted to acute and chronic inflammation and hydrops.

This work, like the volume on the heart, is characterized by evidences of a wide personal experience combined with a good working knowledge of the literature of this and other countries. Dr. Babcock not only has an attractive manner of placing his subject matter before the reader, he also possesses sound judgment in sifting important matters from the mass of literature, and consequently his work, in a sense, an epitome of the important known facts concerning diseases of the lungs flavored with his own experience. The book naturally enough has some defects, as might be expected in a first edition. These consist mainly, however, in a lack of emphasis placed upon some minor points, and this is, after all, a matter of personal judgment. The rôle played by influenza in recent years in increasing certain types of bronchial and pulmonary disease,

while mentioned, is not sufficiently emphasized. The discussion of the symptoms and signs of pulmonary infarct and of pulmonary oedema is hardly extensive enough. The description of meningism as a symptom of pneumonia in young children is hardly detailed enough for a work intended for a general practitioner. The presence of acid fast bacilli in pulmonary gangrene, and their possible confusion with tubercle bacilli, is not mentioned. Some of the newer signs, as Grocco's and Koranyi's, receive no mention. The chapters on the bronchi and pleura contain no specific discussion of neoplasms of these structures. It is only fair to say that these are not serious faults, and that, taken as a whole, the book is eminently satisfactory. It is well printed, well indexed, and illustrated mainly by reproductions of photographs, most of which really illustrate.

G. B.

Manual of Clinical Chemistry. By A. E. AUSTIN, A. B., M. D., Boston: D. C. Heath and Co., 1907.

This is a small book of 270 pages which has for its object the presentation in condensed form of those parts of physiological chemistry and microscopic technique which are of practical value to the student and clinician. The work contains chapters on the elements, chemical processes in the body, the carbohydrates, fats, and proteids, and then takes up the chemical and microscopical examination of blood, milk, digestive fluids, feces, and urine. It ends with a chapter on metabolism. The work is arranged in the form of a series of practical experiments, the details of which are briefly given, interspersed with explanatory text. It is, in the main, clearly written, and covers the subject as well as could be expected in so small a volume. It should be useful to the student and to the practitioner who wants a small work giving practical directions as to the technique and significance of the tests usually employed in the clinical laboratory.

G. B.

Chemical Pathology. Being a Discussion of General Pathology from the Standpoint of the Chemical Processes Involved. By H. GIDEON WELLS, Ph. D., M. D., Assistant Professor of Pathology in the University of Chicago and in Rush Medical College, Chicago. Octavo of 549 pages. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$3.25 net.

The author, recognizing the trend of medical endeavor within the past few years, has endeavored to collect and systematize the tremendous mass of data which has been accumulating with reference to the chemical processes underlying pathological lesions. Advances in pathology of late have come from the chemical rather than the morphological side of the subject. He rightly assumes therefore that the subject matter of this excellent work should form the link which connects pathology and biological chemistry. Hence the material presented must be of interest to

the pathologist interested in chemical experimentation and the biological chemist attacking problems connected with pathology.

The first few chapters of the book act as an introduction to the general treatment of the subject in that the chemistry and the physics of the cell are discussed in a concise but thorough manner; the important topic of extra- and intra-cellular enzymes in their relation to autolysis in pathological processes, as in exudates, pneumonia, necrotic areas, etc., is excellently discussed. A chapter is devoted to the chemistry of bacteria and their products, including plasmolysis, plasmoptysis, chemotaxis and enzymes. Next follows some few notes on the chemistry of the animal parasites. The author has given an admirable description of the chemistry of immunity against bacteria and their products and the reactions of agglutination and precipitation. The chemistry of what is known of the toxins and antitoxins is well written and one notes with pleasure the absence of the well-known diagrams used primarily by Ehrlich to illustrate the various cell groups in relation to his theory and copied continuously since then. The author well states that these pictures merely represent chemical groupings and at present we are sufficiently accustomed to thinking in chemical terms to do without such crude representations. A few pages are devoted to the means which the body possesses of defense against poisons of known composition and of organic poisons, such as ricin, abrin (phytotoxins), and snake venoms, spider poisons, etc. (zootoxins).

Hæmolysis and serum cytotoxins are concisely discussed together in one chapter. The mechanism of hæmolysis by serum, by bacteria, by vegetable poisons, by venoms, and in disease is presented in a thoroughly readable way.

In the chapter on inflammation, amoeboid motion and phagocytosis, together with the chemistry of chemotaxis are well explained, and the most interesting researches of Rumbler on the physical analysis of life movements of the cell are described at some length. In these experiments it is shown that many of the so-called amoeboid movements are but physical alterations in the protoplasm brought about by changes in the surface tension. These movements can be duplicated by drops of fluids, such as oil of cloves or chloroform in water. This latter chapter is most instructive.

The author next takes up successively disturbances of the circulation and diseases of the blood, including hæmophilia, anaemia, leukaemia, etc.; œdema, in which a very lucid description of the modern theories of lymph secretion is given; retrogressive changes (necrosis, gangrene, rigor mortis, parenchymatous degeneration, fatty changes, etc.), calcification, concretions and incrustations, pathological pigmentation and the chemistry of tumors.

In the chapter on the pathological conditions due to or associated with abnormalities in metabolism, including autointoxication, are combined short discussions on uremia, eclampsia, yellow atrophy, phosphorus poisoning, acid intoxication, fatigue and superficial burns. These are followed by gastro-intestinal autointoxications and related metabolic disturbances. The three final chapters include the chemical pathology of the ductless

glands; uric acid metabolism and gout and diabetes in the general sense, including glycosuria of all types.

Upon the whole, the book is admirably and scientifically written and the material has been arranged and presented in a most pleasing manner. The subject matter should be of most intimate value to anyone interested in medicine. The author deserves unstinted praise for the excellent way in which he has collected the facts and presented them as this new and fascinating subject of chemical pathology.

H. C. J.

A Text-Book of Pharmacology. Including Therapeutics, Materia Medica, Pharmacy, Prescription-Writing, Toxicology, etc. By TORALD SOLL-MANN, M. D., Assistant Professor of Pharmacology and Materia Medica, Western Reserve University, Cleveland, Ohio. *New (2d) Edition.* Octavo of 1070 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$4 net; Half Morocco, \$5 net.

In this somewhat bulky second edition, the author has attempted to combine in the space of one book a text-book of therapeutics, materia medica and pharmacology, with a manual for laboratory exercises on the latter subject. The first one hundred odd pages are given over to the preparation and prescribing of medicines and toxicology. Then follows the discussion of the various drugs classified according to their pharmacodynamic action. Under each separate class of drugs is included: I. The Members of the Group; II. Summary of Their Actions; III. Details of Their Action; IV. Absorption, etc.; V. Differences in the Group; VI. Toxicology; VII. Therapeutics; VIII. Materia Medica. In this way the author discusses in a necessarily condensed form what is known concerning those substances employed in the treatment of disease and their methods of application and neutralization.

The outline for a laboratory course in pharmacology, considered in its general meaning, occupies 170 pages. It commences with a very complete detail of the arrangement of the course, chemical equipment, apparatus, a list of text-books for reference, and a description of the experimental technic and apparatus employed in pharmacological experimentation on animals. The main part includes a very complete set of exercises (76 in all) which are planned to demonstrate the action of all of the more important drugs. This division of the work is excellent and shows the result of actual experience in teaching the subject from the experimental standpoint. It must be said, however, that it seems distinctly unfortunate that the author has seen fit to incorporate this laboratory manual inside of the covers of a text-book, since it entails an unnecessary expense should only one part of the book be wanted.

The volume concludes with an appendix, including a short outline of a course in materia medica, table of chemic drugs (formulae, molecule weights, and solubility), average doses, given in U. S. Pharmacopœia, 8th Edition, 1905, bibliographic references and a twenty-eight-page index.

Upon the whole, the book is well and carefully written and can be recommended as a safe guide to put into the hands of students engaged in the study of the subjects covered by the work.

H. C. J.

The Principles and Practice of Dermatology. Designed for students and practitioners. By WILLIAM ALLEN PUSEY, A. M., M. D., Professor of Dermatology in the University of Illinois; Dermatologist to St. Luke's and Cook County Hospitals, Chicago; Member of the American Dermatological Association. With one colored plate and three hundred and sixty-seven text illustrations. New York and London: D. Appleton & Co., 1907.

The work is an extensive and comprehensive exhibition of the principles and practice of dermatology. The book is well bound and printed. The illustrations are well chosen and consist of photographs, mostly from the author's collection, and photo-micrographs. The latter are used to show the microscopic appearances of the normal skin and the changes produced in disease. They are not as clear or as instructive as reproductions of drawings. The photographs of the actual skin lesions are exceptionally good.

The subject matter of the work is divided into principles and practice.

Under principles, the anatomy, pathology, etiology, symptomatology, and treatment are given more thorough consideration than usual. The general subject of treatment is especially comprehensive and contains directions for the preparations of the various baths, the uses of tuberculin, Wright's vaccines, radiotherapy, and phototherapy.

In the second portion of the work, the practice of dermatology, the author uses Hebra's classification as a basis. Angio-neurotic dermatoses, infectious diseases, and dry, scaly, inflammatory dermatoses are put in groups by themselves. The chapters on syphilis and tumors of the skin are particularly commendable. References to the literature are given in the footnotes and, although they are not intended to be complete, contain the most important articles.

The book is concise, yet complete; the photographs alone make it valuable. It is well worth having.

H. W. C.

Atlas and Epitome of Diseases of Children. By Dr. R. HECKER and Dr. J. TRUMPP, of Munich. Edited, with additions, by ISAAC A. ABT, M. D., Assistant Professor of the Diseases of Children in Rush Medical College, in affiliation with the University of Chicago. With 48 colored plates, 147 black and white illustrations, and 453 pages of text. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$5 net.

English-speaking physicians who are unable to read German should feel deeply indebted to the Saunders Company for publishing the translations of the deservedly popular series of Hand Atlases originally pre-

pared by Lehmann of Munich. The one before us on Diseases of Children fully upholds the reputation of the preceding volumes of this series. The German authors have both achieved an enviable reputation in their specialty and Dr. Abt has made a very commendable translation. The colored plates and illustrations, however, need no translation. They are excellent and the diseases portrayed are well selected.

A study of clinical material and of pediatric literature is necessary to keep abreast of the advances in this comparatively new specialty. The plates and illustrations in this volume serve as a substitute for a "children's clinic." The text is concise and only emphasizes the important points of the various diseases. Dr. Abt has made a number of editorial notes which enhance the value of this work.

This book deserves a place in the working library of every progressive physician.

H. L. K. S.

A Text-Book of Materia Medica for Nurses. Including Therapeutics and Toxicology. By GEORGE P. PAUL, M. D., Assistant Visiting Physician and Adjunct Radiographer to the Samaritan Hospital, Troy, N. Y. 12mo of 240 pages. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$1.50 net.

Inasmuch as there is no great occasion for nurses to know much about materia medica it would naturally follow that the multiplication of textbooks upon that subject, especially intended for nurses, is equally unnecessary. However that may be, the book in question is a practical one and contains many items in Part V, entitled "Practical Therapeutics," which will prove of much value to the average nurse. Really the only adverse criticism which can be justly made is that Part IV deals entirely with such remedies as "acetozone," "alphozone," "dolomol," "helmitol," and similar extra-pharmacopœal "proprietarys," which are but little known to and but rarely prescribed by the scientific physician.

SPENCER L. DAWES.

The Care of the Baby. By J. P. CROZER GRIFFITH, M. D., Clinical Professor of Diseases of Children in the Hospital of the University of Pennsylvania. *Fourth Revised Edition.* 12mo of 455 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$1.50 net.

In twelve years this book has gone through three editions and has been reprinted twelve times. This is convincing proof that the author has succeeded in his task of furnishing a reliable guide for mothers anxious to inform themselves with regard to the best way of caring for their children in sickness and in health. The previous editions have been reviewed in the ANNALS and received commendatory criticism. The present edition contains 455 pages, an increase of 51 pages over the preceding edition, and it also contains a number of new illustrations.

A second appendix of 15 pages has been added, in which a description of some of the principles of infant feeding are given. The author divides this into three divisions: I. The General Principles Governing the Feeding of a Healthy Infant. II. The Food Mixtures to be Employed. III. The Modification of the Method if Indigestion Develops. Only mothers without medical aid are advised to consult this appendix. The author urges mothers and nurses to entirely avoid the responsibility of selecting and regulating the baby's diet.

It would not be a waste of time for physicians to read and consult this book. It might enable them to successfully pass the ordeal of the modern, progressive mother's deluge of questions.

H. L. K. S.

A Text-Book of Practical Therapeutics. With especial reference to the application of remedial measures to disease and their employment upon a rational basis. By HOBART AMORY HARE, M. D., B. Sc., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital; One-time Clinical Professor of Diseases of Children in the University of Pennsylvania; Laureate of the Royal Academy of Medicine in Belgium, of the Medical Society of London; Member of the Committee of Revision of the United States Pharmacopœia of 1905. Eleventh Edition, enlarged, thoroughly revised and largely rewritten. Illustrated with 114 engravings and 4 colored plates. Philadelphia and New York: Lea Brothers & Co., 1907.

It is no easy task for the reviewer to keep pace with the frequently recurring editions of this work on therapeutics, especially as each new edition contains much new and valuable matter. This edition gives valuable hints on the artificial feeding of babies, the hypodermic use of mercury and other drugs, the toxæmias following chloroform and ether anæsthesia and many new drugs are discussed. Without doubt this is the most compact, concise and interesting text-book on therapeutics for the use of the medical student published.

SPENCER L. DAWES.

A Practitioner's Handbook of Materia Medica and Therapeutics. Based upon established physiological actions and the indications in small doses. To which is added some pharmaceutical data and the most important therapeutic developments of sectarian medicine as explained along rational lines. By THOS. S. BLAIR, M. D. The Medical Council, 4105 Walnut Street, Philadelphia.

"Many men of many minds, Many birds of many kinds, Many fishes in the sea, Many men who can't agree," would have been an excellent inscription upon the frontispiece of this book, for within the 240 pages of reading matter are crowded views of the "regular" and every kind

of conceivable "irregular." There is, however, a valid excuse; yes, a reason, for its publication, in that it lays great stress upon the fact that small doses frequently give better therapeutic results than do the larger ones, and with the more important remedies it notes at some length the advantages of the smaller dose.

SPENCER L. DAWES.

Lea's Series of Pocket Text-Books. Materia Medica, Therapeutics, Pharmacology and Pharmacognosy. Including Medical Pharmacy, Prescription-writing and Medical Latin. A Manual for Students and Practitioners. By WILLIAM SCHLEIF, Ph. G., M. D., Demonstrator of Medical Pharmacy in the Medical Department of the University of Pennsylvania. Series edited by BERN B. GALLAUDET, M. D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, New York, etc. Third Edition, revised and enlarged. Philadelphia and New York: Lea Brothers & Co., 1907.

"This volume is intended to afford a condensed yet comprehensive text-book and work of reference on materia medica, therapeutics, and a range of cognate subjects which can be grouped with manifest advantage."

While the book contains a great deal of valuable information, it is rather difficult to decide just how to catalogue it. It certainly is a trifle too bulky to rank as a satisfactory "Quiz-Compend," if such a thing there be; yet to call a demy 8vo volume of 434 reading pages "a work of reference on Materia Medica, Therapeutics, etc.," is, to say the least, faulty nomenclature, especially when the volume "covers the entire Materia Medica in practical use at the present time." There is but little if any occasion for criticism of the subject matter, for the author seems to have well considered his statements and verified them and the relative importance given to physiological action is in line with the present tendency in scientific study.

SPENCER L. DAWES.

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Edited by Miss Ada Bunnell, B. L. S.

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Recent Accessions to the Library

Albutt, T. C. *On Professional Education with Special Reference to Medicine.* London, 1906.

Attfield, J. *Chemistry, General, Medical and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia.* Philadelphia, 1906.

Barker, L. F. *Anatomical Terminology, with Special Reference to the (B N A), with vocabularies in Latin and English and illustrations.* Philadelphia, 1907.

Bland-Sutton, John. *Tumors: Innocent and Malignant; their Clinical Characters and Appropriate Treatment.* Ed. 4. Chicago, 1907.

Broadbent, Sir W. H., and Broadbent, J. F. H. *Heart Disease and the Aneurysm of the Aorta, with Special Reference to Progress and Treatment.* Ed. 4. London, 1906.

Burot, F., and Legrand, M. A. H. A. *The Hygiene of the Soldier in the Tropics.* Tr. by Capt. G. W. Read. Kansas City, Mo., 1899.

Cantlie, J. *Physical Efficiency, a Review of the Deleterious Effects of Town Life upon the Population of Britain, with Suggestions for their Arrest.* London, 1906.

Connecticut Training School for Nurses. *Hospital Notes for Probationers.* New Haven, 1904.

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PATHOLOGY AND BACTERIOLOGY

Edited by Richard Mills Pearce, M. D.,

Assisted by Charles K. Winne, Jr., M. D., and Leon K. Baldauf, M. D

The Influenza Bacillus in Inflammations of the Respiratory Tract in Infants. MARTHA WOLLSTEIN. *Journal of Experimental Medicine*, 1906, VIII, 681.

The chief object of this study was to isolate the influenza-like bacilli from the throats and bronchial mucus of children with and without pulmonary inflammation, and to recognize the different forms by their cultural characteristics and agglutination reactions.

A series of normal children proved negative. Other cases examined included coryza, bronchitis, broncho-pneumonia, lobar pneumonia, empyema, rachitis, gastro-intestinal diseases, typhoid fever, diphtheria, tonsillitis, measles, general sepsis following mastoiditis, rheumatism and cerebro-spinal meningitis with and without pneumonia. Throat cultures were taken two or three hours after a meal, and blood agar plates made which were examined after seventeen to twenty hours incubation. Sub-cultures on blood agar plates usually served for the purpose of isolating the influenza in pure culture when other organisms, especially cocci, were not present in great numbers.

Several varieties of organisms grew on the plates, the influenza bacillus in many cases out-numbering the others. Other organisms present were: the pneumococcus, streptococcus, staphylococcus albus and aureus, micrococcus catarrhalis, diplococcus intracellularis (in a case of cerebro-spinal meningitis on the third day), *Bacillus diphtheriae*, pseudo diphtheria bacilli, an unidentified bacillus and finally hemophilous bacilli resembling *Bacillus influenza*. The hemophilous bacilli were like those described by Pfeiffer, sometimes polar staining, at times forming threads not taking the Gram stain, and only grew on media containing haemoglobin. From these cases several strains of the bacillus were obtained. Colonies, pin-head in size, were seen in all the strains.

The blood of all but two patients gave negative agglutination reactions in higher dilutions than 1 to 10. Cases of pertussis were not included. The blood of an adult suffering from influenza gave a positive reaction in a dilution of 1 to 20 on the eighth day, and a case of intermittent influenza gave a reaction of 1 to 40 during the second and third attacks. By immunizing rabbits with the strains from cases of pneumonia and adult influenza, it was found that the serum gave a reaction in dilutions of 1 to 400. The pertussis strain showed greater variation in agglutination than any of the other strains.

The cases in which the influenza bacilli were found were marked with higher temperature, greater prostration and longer duration of disease than the uncomplicated cases of broncho-pneumonia. In the cases of empyema, the influenza bacillus was found in the bronchial mucus, three days before operation at which time it was also to be found in the pus.

Of the twenty-four cases of tuberculosis eight gave positive results. It seems probable that the influenzal infection may light up old tubercular

lesions. Of the twenty-seven cases of measles examined, nine gave positive cultures.

Since broncho-pneumonia is a frequent complication of measles and often due to the influenza bacillus, this fact speaks against the bacillus being a saprophyte.

In twelve cases of purulent conjunctivitis there were found bacilli belonging to the influenza group.

The author concludes:

1. That influenza bacilli are not normally found in healthy throats of children, and those not suffering from any respiratory lesion.

2. That the clinical course of the disease with which they are associated is influenced by them. This fact is especially true in regard to tuberculosis. The view that the influenza bacillus is a harmless saprophyte is not supported by these investigations. The term pseudo-influenza bacillus should be discarded since the cultural characteristics, and the agglutination reactions show that all the strains belong to one family, even the influenza bacillus obtained from pertussis, in which there is the greatest diversity both as to culture and agglutination.

F. G. S.

Renal and Ureteral Hematuria.

ARTHUR L. CHUTE. *Boston Medical and Surgical Journal*, 1907, CLVI, 33.

Hematuria is a symptom due to a local or general condition and is termed by many primary or secondary hematuria. Therefore to treat a case presenting this symptom it is necessary first to determine the source of the bleeding and second, the nature of the lesion producing it. While renal and ureteral hematurias differ from those of ureteral origin in that the blood and urine are intimately mixed, there is nothing in their appearance that can be relied upon to distinguish them from hematurias of bladder origin. There are two things, however, that if present have considerable value in determining the probable site of the bleeding. When the urine contains any considerable number of cylindrical clots one may assume with a fair degree of certainty that the bleeding is from above the bladder, if there are numerous casts with blood corpuscles adherent it is very probable that it is from the kidney. The absence, however, of either of these signs is not in the least against a hematuria being of renal origin. Oftentimes subjective and objective symptoms may lead us astray when drawing conclusions as to the origin of a hematuria. This is well illustrated in a case reported by Swan. The patient was a woman aged thirty who had pain in the left costo-vertebral angle for two years. Six months after the beginning of her pain hematuria appeared. Her left kidney could be palpated and it was tender but apparently enlarged. The natural inference was that the bleeding was from this kidney. Cystoscopy, however, showed a pedunculated papilloma that was attached just at the outside of the left ureteric orifice. The growth was removed and the symptoms disappeared. Such cases emphasize the fact that cystoscopy is the only

accurate means that we have of distinguishing between vesical and renal hematuria. The use of any of the various segregators would have led to faulty conclusions. Cystoscopy allows us not only to determine whether the bleeding is from the bladder or further up the tract, but also in the latter instance, to determine from which side it is, or if it is from both, as occasionally happens, to recognize this fact. When the blood is small in amount it may be impossible to determine by inspection alone which side is bleeding and one may have to add to simple cystoscopic examination catheterization of the ureters. The assumption that blood seen issuing from a ureteric orifice has its origin in the kidney of the same side does not hold absolutely. The author reports a case of ureteral bleeding in a man fifty-two years of age. Cancer of chronic nephritis in his left kidney was suspected and operation advised. At the operation, the kidney was not enlarged as a whole, but had on its anterior surface a small nodule which was thought to be a cancer. The kidney was therefore removed. No blood was found in the pelvis and the mass on the anterior surface extended but a short distance into the kidney substance. Microscopical examination showed that the nodule was a bit of misplaced adrenal tissue that was not proliferating and that the kidney itself was in every other respect normal. Sixteen days after the operation the bleeding ceased and there has been no recurrence.

Having localized a hematuria as being of renal origin and recognizing that it is only a symptom of some local diseased condition it is necessary to determine if possible its underlying cause. In a large proportion of renal hematurias it will be found that the bleeding depends upon one of four conditions; malignant disease, calculus, tuberculosis or chronic nephritis. The points upon which one must depend principally for early diagnosis of a carcinoma are: a painless hematuria, usually rather profuse and uninfluenced by rest, coming on without cause in a person of forty years or more, a urine that shows little beside blood, a non-sensitive kidney that may or may not be enlarged. A nodular, firmly adherent kidney belongs to the stage when the disease is practically inoperable. Sarcoma of the kidney is more frequent in children and bleeds less often than carcinoma. It grows rapidly and the size of the kidney mass usually leaves little doubt as to the diagnosis.

Many patients with renal calculus are young adults. Profuse hematuria is less common than in malignant disease. It may or may not be attended with pain. In the aseptic cases it may be quite painless, in the infected cases there is usually pain. The bleeding is increased as a rule after exercise whereas absolute rest will bring about disappearance of microscopic blood. Besides blood one always finds considerable mucus and usually an excess of leucocytes and epithelial cells.

Renal tuberculosis is most commonly seen in early adult life. The hematuria is usually small in amount and intermittent in character. The urine will show beside the blood a greater or less amount of pus and pelvic epithelium. The real test as to the tuberculous nature of the hematuria is the demonstration of the presence of the tubercle bacillus by the direct method or by the inoculation of animals. In rare instances a small well-walled focus of tuberculosis deep in the substance of a

pyramid may cause hematuria by congestion or interference with the renal circulation and yet no tubercle bacilli may be found in the urine until such time as there is a connection between the focus and the renal pelvis.

Chronic nephritis may give rise to a hematuria and differs from acute nephritis in that it lasts much longer and is often profuse. The hematuria is usually intermittent and may extend over a very long period as in a case reported by Kursmaecker where the bleeding lasted two years and a half. This is one of the conditions in which a bilateral hematuria has occasionally been noted as in the cases reported by Legum and Nicolich. The urine may at times show only blood but a large proportion of the cases will show in addition to blood a few casts. In hematurias of the toxic type the urine is sterile, while it contains organisms in a considerable proportion of the cases of infectious origin. In the type due to infection the bladder may show changes about the ureters.

Less common causes of hematuria are hydronephrosis, movable kidney and cysts of the kidney. The author has reported an instance in whom the rupture of a small retention cyst in the upper pole of the kidney on the eleventh day after a prostatectomy led to death from hemorrhage on the twenty-third day. At autopsy an open mouthed vessel was found in the edge of the ruptured septum between the cyst and the kidney pelvis.

The invasion of the kidney by certain parasites such as the tenia echinococcus and distoma hematobium, may give rise to hematuria. The diagnosis will be evident from the finding of hooklets in the one and ova in the other. Rovsing records a case of hematuria due to a supernumerary renal vessel bowstringing the kidney pelvis. Although the instances in which a hematuria has been actually proven to be of ureteral origin are relatively few there are some reported cases where a kidney that has been removed for hemorrhage has shown no lesion and yet the hematuria has not stopped at once but continued for a time, then diminished and finally ceased. While we know that the ureter is subject to primary malignant growths, to kinks and strictures, all these are occluding in nature and not likely to cause bleeding from the ureter itself. With the exception of the cases of calculi, our present knowledge of the causes of ureteral hematurias and the different symptoms that they produce is so small that we are unable to distinguish one from another. The most that can be expected is to recognize that a given hematuria is ureteral in origin.

C. W. L. H.

Papillary-Cystadenomata of the Breast.

ROBERT B. GREENOUGH and CHANNING C. SIMMONS, *Annals of Surgery*, 1907, XLV, 188.

The difficult point in the classification of benign breast tumors is the association of connective tissue and epithelium in their composition. As a result of the attempts of pathologists and clinicians to apply to tumors of the breast names accepted for tumors of other organs, con-

fusion resulted which only began to pass away after Ribbert offered a special group of fibro-epithelial tumors. This classification is purely pathological and does not describe the different forms of tumors of the breast as they appear in surgical practice. Warren divided these tumors into two classes.

A—Fibrous type—

Periductal fibroma.

Periductal myxoma.

Periductal sarcoma.

B—Epithelial type (cystadenoma)—

Fibro-cystadenoma.

Papillary cystadenoma.

Tumors of the fibrous type arise from the peculiar hyaline periductal fibrous tissue although they contain portions of the epithelial gland substance in the form of much distorted ducts and clefts lined with epithelium. According to the degree of cellular development and richness in nuclei of the tissue they are called periductal fibroma, myxoma or sarcoma. They are the firmly encapsulated tumors of the breasts of young women.

The tumors of the epithelial type are those in which the fibrous tissue is present merely as a stroma to support the epithelial new formation. Fibro-cystadenomata are comparatively rare. They are localized tumors of periductal origin in which epithelial proliferation or cyst formation has progressed to such an extent as to overshadow the growth of fibrous tissue.

Papillary cystadenomata are not uncommon, the authors reporting twenty cases three of which showed the presence of adeno-carcinoma. In the seventeen cases of simple papillary cystadenoma a palpable tumor was present in the breast substance which varied in size from a pea to an orange. In five a number of different nodules were present forming a conglomerate mass. Their situation was almost invariably in the central portion of the breast close to or under the nipple. Retraction of the nipple was noted in three cases of simple papillary cystadenoma and in two of the cases of adeno-carcinoma. This was possibly due to the development of the new growth in the large ducts. The axillary lymph nodes were enlarged in only two cases but showed no malignant involvement even in the cases of adeno-carcinoma.

In cross section these tumors presented one or more cysts of varying size containing fluid which was usually bloody and filled to a greater or less extent by papillary outgrowths from the wall. The cysts as a rule were well separated from the surrounding tissue and were not adherent to the skin.

Microscopic sections of the tumors showed one or more cysts as a rule well defined by a definite layer of fibrous tissue from the surrounding tissue. The most characteristic feature was the presence of papillary outgrowths from the cyst wall. These papillary growths were composed of a fibrous tissue stroma with many blood vessels supporting one or more layers of epithelium continuous with the lining of the cyst. The papillary masses were often divided into many branches and occasionally interlaced. Very often they were attached to the cyst wall at

several points in their circumference. Degeneration of the connective tissue, hemorrhagic areas and areas of edema were not uncommon.

The lining epithelium was apparently derived from the large ducts. That lining the larger cysts was commonly flattened and of several layers, that of the smaller cysts was higher and that covering the papillary outgrowths was often columnar and of different degrees of size and development. The degree of proliferation of epithelium varied in different specimens and even in different portions of the same microscopic section. Apparently the origin of the papillary cystadenoma was in the fibrous tissue and epithelium of the walls of the larger ducts. The rate of growth of these tumors is very slow and the epithelium showed but little evidence of rapid reproduction. The fluid present in these cysts was serous or sanguinolent due to thrombosis or rupture of the vessels of the villous stalks and in some specimens the wall of the cyst was deeply stained with blood pigment of similar origin.

As regards the etiology of these tumors very little may be said. They occur generally late in life. The average age was forty-nine and five-tenths years, the extremes nineteen and eighty-one. One was in a man aged fifty-one. Lactation does not appear to be of any significance. The symptoms are perhaps more characteristic and better defined than those of the majority of breast tumors. The most valuable symptom is the existence of a serous or bloody discharge from the nipple. This was present in eleven cases and depends apparently on the patency of the duct between the cyst and the outer world. In certain cases the size of the tumor varied according to the amount of fluid contained and could be diminished at will by pressure forcing fluid out through the nipple. In a number of cases no tumor was felt until sometime after the bloody discharge from the nipple. Three cases had discharge before discovery of the tumor. Slightly enlarged lymph nodes are of little significance in diagnosis.

The prognosis is uncertain. The tumors are of slow growth and may exist for years without inconvenience or causing serious disfigurement. The average duration of the cases reported was twenty-five and eight-tenths months, the longest eight years, the shortest one month. The chief point of interest in prognosis is the likelihood of carcinoma. Three out of twenty showed adeno-carcinoma developing in the cyst wall. The duration of these cases was nine, twelve and eighteen months and their ages were fifty-two, sixty-nine and seventy-six years. None of these cases showed the familiar symptom of discharge from the nipple whereas it was present in all simple cases of more than eight months duration. Two cases showed no return of growth at one and two years after amputation. The third died at the end of four years. Since fifteen per cent. of the cases showed malignancy, radical removal is to be advised in all cases. In every case of doubt, an exploratory incision should be made to determine if benign or malignant. In cases of malignancy though it be of low type, the only reasonable precaution is complete removal including the pectoral muscles and lymph nodes. When this is done the prognosis is more favorable than in the average cancer of the breast.

C. W. L. H.

A Case of Heteroplastic Ovarian Grafting followed by Pregnancy and the Delivery of a Living Child.

R. T. MORRIS, *Medical Record*, May 5, 1906.

The author describes the implantation of pieces of normal ovary into the broad ligaments of a woman whose ovaries were removed at the same time for cirrhotic ovaritis. This was done by making slits in the posterior layer of each broad ligament and anchoring the grafts in these slits with a single suture, the smooth surface of the graft being allowed to project into the peritoneal cavity to facilitate the free escape of ova.

Previous to the operation the patient had not menstruated in two years and had suffered all the common symptoms of menopause.

Four months after the operation the patient menstruated, the period lasting five days. Four years later she became pregnant and was delivered at full term.

The author is convinced that this is a case of heteroplastic ovarian grafting. From his experiments he found that when ovaries were removed and then reintroduced into their original host (homologous grafting) the tendency was for the ovary to live and functionate.

When, however, the ovaries of one animal were engrafted into another (heteroplastic grafting), the principle of intolerance of the tissues of one animal for the tissues of another come into play, and the tendency was for the ovary to become absorbed or to degenerate. This tendency was not invariable and the rules determining it are obscure. Animals immunized to each other's serum were also used in experiment and here the grafts were more rapidly absorbed in the immunized than the non-immunized. Hence all that can be stated is that the tolerance of one woman's tissues for another's was complete, though why and wherefore must remain unexplained.

The author emphasizes the point, that the cirrhotic ovaries were removed by means of Tuffiere's angiotribe; and by that method it was not possible to leave any ovarian tissue behind before the normal ovarian grafts were implanted.

M. D.

Adeno-carcinoma of the Abdominal Wall; Developing subsequent to the Removal of Benign Ovarian Neoplasms.

ED. A. SCHUMAN. *American Journal of Obstetrics*, August 1906.

The author states that malignant tumors not infrequently develop in the scar tissue of the abdominal incision after laparotomy but that there is a peculiar type of adeno-carcinoma which sometimes appears in the abdominal wall after ovariectomy for benign tumor, notably multilocular cysts which is difficult to classify and not to be explained by the ordinary pathological processes. The following is the ninth reported instance in the literature.

Patient with negative history had seven years before been operated on for a multilocular ovarian cyst. The cyst was tapped, drawn through the abdominal incision and removed. The stump was treated with the

Pacquelin cautery and the wound closed without drainage. Recovery was uneventful.

Patient remained well for two years and then noticed pain in lower abdomen, sharp and stabbing in character. Three months later small lump appeared in the centre of the incision and increased rapidly in size. On admission she had pain on right side of abdomen and about umbilicus. Coeliotomy was done and from the space between the peritoneum and rectus muscle was removed a tumor the size of a large cocoanut. Convalescence was uneventful but patient remained well but a short time. Six months later several recurrent nodules were removed. She then rapidly failed in health and is now in the last stages of cachexia.

Specimen is kidney shaped fourteen to seven centimeters and seven centimeters in thickness. It was densely adherent to muscle, fat and peritoneum. The growth itself possessed a dense firm capsule with a free blood supply. On section the tumor exudes a serous fluid, consistency fibrous with some caseous areas, pinkish grey in color. Several cavities throughout growth.

Microscopically the growth consisted of a well developed connective tissue framework, rich in cells which enclose and surround many areas of glandular tissue. The glands simple, tubular or branched, are uniformly lined with cylindrical epithelium nuclei large, deep stained, and at the bottom of cell. In many glands the lining membrane is penetrated by the proliferating epithelium which is heaped up in the surrounding connective tissue. There is generally one layer of cells lining glands but in many instances proliferation has so advanced that several layers are seen. The entire picture was that of ovarian adeno-carcinoma.

The author's deductions are as follows:

The growth was probably not primary in the abdominal wall owing to the long period of freedom of invasion of the scar (seven years), and the tumor itself having rapidly growing highly specialized glandular elements.

The possibility of its having sprung from the urachus is ruled out from the fact that it lay extra-peritoneally and that membrane was everywhere intact.

There remain three hypotheses.

(1) Adeno-carcinoma, primary in some other organ than the ovary, with metastases to the abdominal wall.

(2) The ovarian cyst was not carefully examined and contained carcinomatous areas and cancer cells were implanted in the incision (this is combatted by the long period of latency).

(3) The cells from benign ovarian growths may have become implanted on the tissues of the abdominal wall and after a long period of quiescence have become active and undergone malignant alteration.

In the reported cases the time between the primary operation and the development of the abdominal tumor averaged over two years. This fact is a strong point against a recurrence of a primarily malignant tumor, or a metastasis from a primary growth elsewhere, unless it be granted that the primary growth began after the original operation.

Of the eight collected cases, six were typical pseudo-mucinous multilocular cystadenomata. One was a unilocular papillary cystoma, and one was a papillary pseudomucinous cyst.

Of the secondary abdominal growths, seven were adeno-carcinomata, strongly resembling adeno-carcinoma of the ovary; one in addition to the gland tissues contained scirrhus areas; while one was a complicated tumor showing typical adenomatous areas with some fields distinctly of sarcomatous change.

This highly organized type of neoplasm is strong evidence against its being primary in the abdominal scar. There being no tubular glands lined with a single layer of cylindrical epithelium in the deep abdominal parietes, the growths cannot be primary there.

There remain two possibilities:

(1) That the ovarian cyst was primarily malignant, with implantation at operation or

(2) The cells of a multilocular ovarian cystadenoma may after a period of latency take on malignant change.

M. D.

Malignant Tumors in the Region of the Kidney in Children. (Zur Kasuistik der malignan Tumoren der Nierengegend im Kindesalter.)

OSHIMA. *Wiener klinische Wochenschrift*, No. 4, 1907.

Statistics show that malignant tumors of the kidney are much more frequent in children than in later life. Many cases have been reported in the new born, and it appears that all have their origin in fetal life. Attempts have been made to classify these tumors from their histological structure and to differentiate them according to the kind of tissue. Birch-Hirschfeld, however, classified all these tumors into one single group, under the term "embryonic adenosarcoma." He found the constant presence of involuntary muscle fibers and glandular elements. The muscle fibers, he claimed, originated from the Wolffian bodies. Muus, Wilmus, and others, agree that these tumors have their origin in the mesoderm cells. These embryonic mixed tumors of the kidney have the following symptoms in common. They are most frequent in early childhood. They grow very rapidly and may fill the abdomen in a few weeks' time. They seldom affect the neighboring organs and have very little tendency to spread by metastasis. Tumors which start from the retroperitoneal glands and the superrenals have not characteristic structure or symptoms of the embryonic adenosarcomas. The writer gives the histories, autopsy records and histological examinations of three cases of tumor of the kidney. The first case was one of embryonic adenosarcoma, the second and third small round cell sarcomas with multiple metastases. All occurred in children from one to two years of age. The examination of the urine was negative in all three cases and apparently there was no pain. Hematuria, while frequent in kidney tumors of adults, was not present in these cases. The presence of a palpable tumor is the only symptom in such young children. In the two cases of round-celled sarcoma there was a marked increase in the eosinophiles, which were eighteen per cent. in the third case. The only remedy is surgical, and the statistics show a very high mortality. The best figures are those of Albarran, who had an operation mortality of thirty per cent. in ninety-seven cases and eleven remained healthy one year after the operation.

ALBANY MEDICAL ANNALS

Original Communications

THE MEDICAL HISTORY OF MONTAIGNE.

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It is to be supposed that Montaigne had never any very serious diseases, as he does not speak of them and this is quite a sufficient reason, because the author of the "Essais" is too apt to give in detail his adventures, those of his health at least, so that one may be sure to find his entire pathologic history in his works. This history can be summed up in a word: Montaigne was arthritic. Throughout his "Essais," and especially in the journal of his voyage in Italy, he relates his attack of gout with much detail; this disease he inherited from his father, as will be seen from the following: "Il est vraisemblable, que je tiens de nom père cette qualité pierreuse, car il mourut merueilleusement affligé d'une grosse pierre qu'il avait eue à la vessie."

The question of heredity seems to interest him quite particularly among other problems and he reverts to it upon two different occasions. "Qui m'esclaircira de tout ce progres, je le croirais capable d'autant d'autres miracles qu'il voudra."

The thought of his calculi and gravel appears to haunt him, and long before feeling the first attacks of his affection he was fearful that he would become subject to it: "C'était à point nommé, de tous les accidents de la vieillesse celui que je craignais le plus."

The great philosopher was not spared, for he suffered greatly and obtained very little relief. When he allows a diatribe against physicians to escape from him it should be attributed to an attack of bad temper produced by his renal colics, which is quite comprehensible. Whatever he may say in his "Essais," Montaigne was not the only sufferer from this affection among his collaterals and he tells of one of his brothers who came to pay him a visit at a watering place in Italy, who was afflicted with the same affection.

"Je suis d'une taille un peu au'dessous la moyenne . . . J'ai au demeurant la taille forte et ramassée, le visage non pas gras mais plein, la complexion entre le jovial et le melancholique, moieusement sanguine et chaude." The picture of Montaigne thus continues throughout several pages and he declares that he is quite apt in all kinds of exercise, excepting running, and he thinks that his soul is well made for his body. "Il n'y a rien d'allègre et de souple. Il y a seulement une vigueur pleine, ferme et rossise." We also learn that he was bald, that this occurred at about the age of forty and was in all probability due to his arthritic temperament. He spoke through his nose and took cold readily. This probably explains the reason why we have so few portraits of him with a bare head and also why he was hostile to the detestable habit of removing the hat in the presence of the great. He disliked to have the head bare, and his politeness which was perfect, was always in a constant struggle with a certain care that he always took of his head. "Je suis assez prodigue de bonnetades surtout en été."

This is not the place to treat the philosophy of Montaigne and whether he sided with Epicurus or Seneca is of little importance for us. I will merely accept his sayings and endeavor to show how he lived. Without being perfectly voluptuous there is no doubt that he ignored no pleasure of existence. Beautiful and pure women he was not indifferent to and he knew the time during repasts when the palate was better prepared for savoring wines. As to Venus he speaks of her at length, placing love among his three favorite occupations, the other two being commerce with his friends and reading. He declares that he never abused the pleasures of youth. "C'est un commerce où il se faut tenir un peu sur ses gardes et notamment ceux en qui le corps peut beaucoup comme moy." He without doubt was a

man of delicate tastes fleeing from easy encounters, but becoming warlike before obstacles. Ordinary acquaintances had little value for him and he feared the danger and the unfortunate results of fortuitous encounters. He nevertheless could not avoid these results and he says: "Si n'ay-je sceu si bien faire que n'en aye eu deux atteintes légères toutefois et preambulaires."

It should be noted that for Montaigne all voluptuousness was defended in marriage. He gives moral reasons taken from Aristotle and biologic reasons according to the physicians of his time, pretending that conception requires much calm in order to take place. Relative to the subject of reproduction he enters into the technical details by quoting certain verses from Lucretius.

During his numerous travels, and he frequently went to Paris, Montaigne was very intimately mixed with the life of the court. Formerly, as to-day, perhaps even more so, there was no fête without a banquet. The noble Gascon took his place there frequently and according to what we read, he held it very well. He had a large appetite, appreciated wine as it ought to be, and did not think of that time when he would be obliged to drink at many fountains in order to destroy the effect of his high living. His life was that of a gentleman during epochs disturbed by religious wars; he was much on horseback, and during his travels slept where he best could. It would appear that he never had any guide as to the proper hygiene to follow and, although I have endeavored to discover if he had a physician attached to his person, the research in this direction has been negative. As he carried out his religion with a certain fervor there is every reason to believe that when he entered his domains he compensated his sumptuous royal feasts by several fasts and he himself tells us so.

Up to the age of forty-five Montaigne tells us that he was never afflicted by any disease. This assertion he repeats several times and affects having indulged in medicine very moderately. "Je croy d'elle tout le pis ou le mal qu'on voudra car nous n'avons Dieu merci, nul commerce ensemble," and further on: "Je laisse faire nature, et présuppose qu'elle se soit garnie de dents et de greffes pour se défendre des assauts qui lui viennent et pour maintenir cette contexture de quoi elle fait la dissolution." This is merely Hippocrates' theory of "*natura medicatrix*."

Although it is relatively easy to determine the physical condition of Montaigne, his mental state presents much greater dif-

faculties to understand, for we find many contradictions. He certainly was an emotional person and this statement may appear strange when one reads the larger number of chapters of his "Essais." The fact, however, is certain and he tells us that the fear of having drank too much "estoupa de manière le gosier" so that he could not swallow a single drop. In the second book of his "Essais," Montaigne declares that old age has the great advantage of becoming detached, among other things, from that of his health; and again in this very same book several chapters further on, we find this characteristic sentence: "Moy qui ay toujours pensé être en bute à tous les accidents qui peuvent toucher tout autre homme."

He had greatly feared the appearance of his gravel, as I have already pointed out, and, as he himself tells us, he passed a portion of his life fearing the outbreak of those troubles which occurred later on, and it may be affirmed that at the end of his life, the philosopher who was so skeptic and kind during the first years of his life, became a hypochondriac. The following passage leaves no doubt on this point: "Je merquois autrefois les jours pesants et ténébreux comme extraordinaires. Ceux-là sont tantôt les miens ordinaires, les extraordinaires sont les beaux et serains. Je m'en vais au train de tressaillir comme d'une nouvelle faveur, quand aucune chose ne me deult. Que je me chatouille, je ne puis tantôt plus arracher un pauvre rire de ce méchant corps, je ne m'esgayé qu'en fantaisie et en songe pour détourner par ruse le chagrin de la vieillesse; mais certes i'y faudrait autre remède qu'en songe. Faible luicte de l'art contre la nature. J'aime mieux être moins longtemps vieil que d'être vieil avant de l'être."

Thus repeated suffering, to which he gave in with courage, took possession of this daily practical philosophy which a long commerce with the ancient writers had developed in this gentleman of the 16th Century. What may, consequently, be thought of Montaigne from a mental standpoint and can one find in his works any indication of a definite affection? The first thing which appears very clear is that Montaigne had an exaggerated fear of sickness and before his first attacks of lithiasis or of gout, it is to be observed that he relates that his father was a lithiasic and that he foresaw with terror the time coming when he would be afflicted with the disease himself. He examined his urine daily and makes the remark that on a certain day he

had only voided one quarter of the amount of fluid that he had taken. Further on he deploras having too readily taken a "casse" which an apothecary had advised and believes that this was the culpable party of a very great mistake. It was here a tempest of intestinal winds that made him uneasy, but they perhaps had their good side as well.

Montaigne was also taciturn and occasionally he is almost a misanthrope. Other than his well known friendship for La Boétie, he was not intimate with any one else and he speaks of his friend especially in his "Essais." This work and that of his "Voyage in Italy" are the faithful recitals of his daily life, his diseases, his smallest acts, all surrounded by very complete and complex commentaries. I am led to believe that Montaigne was a neurasthenic, and like all organic neurasthenics, that is to say, those in whom the neurasthenia is seated upon a solid basis, become later melancholics, and, in point of fact, we see that Montaigne evolved towards this type of psychosis. He ceased to laugh, desired and waited for death and had a tendency towards suicide. I shall endeavor to write the history of the lithiasic period of Montaigne's life, but before doing so I would say a few words regarding his death, which occurred on December 13, 1592. The details are wanting, but we know that he had a sore throat and the recitals that have been given us regarding his last hours upon this earth speak more of his edifying death than the phases of his disease. Estienne Pasquier tells us that for three days he retained perfect consciousness, but was unable to speak and consequently it is extremely difficult to make a diagnosis from this statement alone. Montaigne died leaving one daughter; he had five, but four died when still young.

Montaigne was forty-seven years old when he was seized for the first time with "la plus pire de toutes les maladies, la plus douloureuse, la plus mortelle et la plus irrémédiable." For twelve years he struggled against it with all his power and the results were only medium, if not to say *nil*. He has left us a complete account of his diseases, both in his "Essais" and in his "Journal of his Voyage in Italy." According to these details it may be said that Montaigne suffered from a primary renal lithiasis. Now, secondary lithiasis is more often observed during the course of a suppurating renal lesion, but there is nothing which would lead one to admit this hypothesis in the present case. Calculi of primary lithiasis are usually composed

of the urates and oxalates and it is more than probable that Montaigne passed phosphatic calculi, which, as is well known, is not infrequent. This opinion I base upon the description that he gives of one of his stones: "Pierre de moyenne grosseur qui se brisa aisément. Elle était jaunâtre par le dehors; et brissée, au dedans plus blanchâtre."

From red sand up to large calculi Montaigne possessed a complete collection, and he experienced all the grades of suffering. He did not escape the complications of lithiasis, the most common of which is anuria. He had several attacks and it was during these that he gave vent to this phrase which has become classic: "O que ce bon empereur qui faisait lier la verge à ses criminels pour les faire mourir à faute de pisser était grand maitre en la science de bourrellerie. L'opiniastreté de mes pierres, spécialement en la verge m'a parfois jetté en longues suppressions d'urine de trois, de quatre jours, et si avant en la mort que c'eût été folie d'espérer l'éviter, voyre désirer veu les cruels efforts que cet état m'apporte." The observation of his case was taken with the greatest care and he had been advised by his physician to make note of the amount of urine voided in a given time. This practice was absolutely unfortunate for him, because when he had arrived at a certain degree of nervous irritability, he made daily prognoses from the signs thus observed, and in this way poisoned the few days of quiet that his disease allowed him. He finally came to this conclusion amusing in form, but extremely sad in reality: "C'est une sotte coutume de conter ce qu'on pisse." This ever-present desire to examine himself is certainly a symptom of hypochondria.

Beside his gravel, Montaigne had other symptoms of his gout. In the first place he had headaches, and, on this point, there is no doubt, because the attacks of migraine are extremely well described, with pain above the eyes, fear of light and vomiting. Then neuralgia would come on and was of such a tenacious type that it obliged its victim to remain in bed. Then he was afflicted with a slight orchitis which he says he caused to disappear by taking a douche. Relative to this orchitis one could not be quite as affirmative unless our author had not already described the preceding phenomena of his gout. There are only two lines which allows one to suspect what the affection was: "La grosseur survenue souvent dans les bourses." One might

admit the hypothesis that this may have been a varicocele, which was accentuated by his stay in Italy, a country which is relatively warm.

In spite of all the mocking assertions of the Mayor of Bordeaux, it is hardly permissible to believe that he resorted little to physicians during the twelve years that he suffered, but there is, however, a sure fact and that is that he was never subjected to the operation of lithotomy. He tried many treatments to get rid of his infirmity and among others he speaks of a treatment with a buck fed in a special way, whose blood had a particular virtue, but the buck having been killed two "plezoares" were found in his stomach and this caused the fall of all hope. How is it to be admitted that the blood of such an animal can cure calculus, since it has been able to produce it? Montaigne replies: "Ah! que n'ay-je la faculté de ce songuer de Cicero qui songeant embrasser une garse trouva qu'il s'était déchargé de sa pierre emmy ses draps." As a medicine properly speaking, he only mentions turpentine; the only result obtained by its administration was to give his urine the odor of violets.

Physicians and remedies being unable to do him any good, Montaigne decided to take waters and the description of his trip in Italy practically amounts to a diary of his cures. It was in 1580 that he started, commencing by Germany, Switzerland and finishing at Rome and its surroundings. Dr. James has made a complete summing up of this voyage and consequently it is useless to bring up the subject again, but his personal opinions, which I will speak of directly, have appeared to me too severe and unjust, and without going into details I am desirous of making as plain as possible the entirely new character of Montaigne in his travels. He started to cure himself and he took care of himself. He consulted physicians, usually according to his own choice. He formed his theories, he discussed them and he continued his treatments. In these he applied all his good will; at those stations where patients drank three glasses of water and took one bath, he took two baths and absorbed nine glasses of water without having first taken the obligatory medicines. He finally reached a condition of doubt which was absolutely pathologic, after his many unsuccessful trials. Having taken a "casse" upon the order of an apothecary and which he considered unreasonable, he repeats his regrets of having thus acted, upon three of four occasions: "Je tiens qu'il me fit mal de

prendre cette purgation de casse, car l'eau trouvant nature acheminée par le derrière et provoquée, suivit ce trein-là, là ou j'eusse à cause de mes reins plus désiré par le devant; et suis d'opinion, aux premiers bains que je prendrai, de seulement me préparer avec quelque jûne." He tasted of each spring, noted the effects and regretted that at Rome he had not written enough regarding the "beings." It is evident that he became more and more nervous as he continued. His urine gave him much anxiety: "Je ne rendis jeudi en cinq heures que la cinquième partie de ce que j'avais bu." While observing himself he also observed others and he was not forgetful to make note of two physicians, Donati and Franciotti, who practiced at the same resort and were of diametrically opposed opinions, and he discovered the frauds of the apothecaries who bottled a falsified water, selling it as the product of a neighboring source.

A rather droll adventure happened to Montaigne during this voyage. He was called in consultation. He tells us that living in a retired way, frequenting as little as possible the public at the watering places and "ne soutenant pas la reputation d'esprit et d'habileté" that had been given him, that this silence was interpreted greatly in his favor. Since he did not speak, he was thought to be a savant and being a Frenchman he was consulted in Italy. This consultation was with the hope of curing a certain young man by the name of Paul de Cessis. Montaigne gave in to the supplications and went to see the patient. "Je riais alors en moi-même, mais il m'est arrivé plusieurs fois pareille chose à Rome." Dr. James considers this as evidence of great conceit on the part of the Gascon gentleman and he declared that the Italians laughed up their sleeve at the foreigner, whose vanity destroyed his clairvoyance, but this merely complicates a very simple situation. When Montaigne left Italy in 1581, being called to Bordeaux to fulfill the functions of mayor of that city, he was by no manner of means cured and he had become more skeptic, if such is possible. He continued to suffer, although courageously, and took his mind off his pain by work, which he was obliged to break off from time to time when his pain was too great, and as a compensation he allowed himself to make grimaces. "J'ai tenu toujours ce precepte ceremonieux et simple qui ordonne de tenir bonne contenance et un maintien grave et posé à la souffrance des maux—." Such was the patient; let us see what he says of physicians.

Montaigne has always been considered a perfect skeptic, doubtful of everything and unable to keep an invariable opinion. The perusal of his works would seem to justify this opinion. Nevertheless a certain number of eminent authorities have been able to discover in his "Essais" a hidden end, not recognized by the ordinary reader, and some have wished to see in his philosophy evidences that he was the occult promoter of positivism. To discuss this opinion would require a profound knowledge of Montaigne that I do not possess, but I wish to point out this fact, because it is most interesting from various points of view and is quite capable of opening a new road of research. I have already said that, if Montaigne appeared to hesitate before forming an opinion on each subject, he never changed it as far as physicians are concerned. There is a difference that should be noted and which has never been sufficiently made, namely, that physicians should be separated from medicine. I will endeavor to extract from numerous scattered passages in his "Essais" and "Le Voyage en Italie" the basis of the author's thoughts upon men and the science. Speaking of medicine he says: "Je suis au rebours des autres car je la mesprise bien toujours; mais, quand je suis malade au lieu d'entrer en composition je commerce encore à la hair et à la craindre et respons à ceux qui me present de prendre médecine qu'ils attendant au moins que sois rendu à mes forces et à ma santé pour avoir plus de moyens de soutenir l'effort et le hazard de leurs breuvages." Here is a profession of faith which at once shows us how he felt; the philosopher not merely is disdainful of medical science, but he fears it as well and consequently remains an enemy never to be reconciled. In the first place he says that medicine is not a science and in order to uphold this statement he employs various arguments. "Pourquoy disons-nous que c'est à l'homme science et connoissance, bastie par art et par discours, de discerner les choses utiles à son vivre et au secours de ses maladies de celles qui ne le sont pas? Quand nous voyons les chèvres de Candie, si elles out reçu un coup de traict, aller entre un million d'herbes choisir le dictame pour leur guérison, et la tortue quand elle a mangé de la vipere chercher incontinent de l'organum pour se purger—; pourquoi ne disons-nous de même que c'est science et prudence? The conclusion of all this is that man has never invented anything, having followed the natural law that animals followed before

him. Why should one glorify oneself? At least one should stop at these prescriptions which are empirical in all points and one should be guided by nature alone and not have the awful imprudence to add things of our own making.

“Je ne dis pas qu’il n’y en puisse y avoir quelque art, qu’il n’y ait parmi tant d’ouvrages de nature de choses propres à la conservation de nostre santé; cela est vraysemblable.

“J’entends bien qu’il y a quelque simple qui humecte, quelque autre qui assèche—. Je ne désavoue pas l’usage que nous avons du monde ni ne doute de la puissance et liberté de nature et de son application à nostre besoiing. Je me défie des inventions de notre esprit, de nostre science et art en faveur duquel nous l’avons abandonnée et ses règles, et auquel nous ne savons tenir modération et limite.”

Whole pages would have to be quoted in order to follow this pleading during which Montaigne makes no digression. He argues and comes to facts; experience aids him. “Il n’y a nulle race de gens si tost malade et si tard guérie que celle qui est sous la jurisdiction des médecins.” He was always able to do without their services and he also reproaches them for dying like any other ordinary mortal. “Quoy eux-mêmes nous font-ils voir de l’heur et de la durée en leur vie, qui nous puisse témoigner quelque apparent effet de leur science?” Happy people are those who are ignorant of medicine. “En effet les violentes harpades de la drogue et du mal sont toujours à notre perte—Laissons donc faire la nature, elle prend soin de nous.” This objurcation recurs often in the “Essais” and is an unceasingly repeated call and one that its author wishes to be heard. To terminate this paragraph I would quote a phrase which, in my opinion, sums up the thought of Montaigne with much force: “Suyvons de par Dieu, suyvons. Il meine ceux qui suyvent, ceux qui ne le suyvent pas il les entraîne, et leur rage et leur médecine ensemble. Faites ordonner une purgation à votre cervelle, elle y sera mieux employée qu’à votre estomac.”

This unshaken and exclusive faith in nature proves that Montaigne was far from being a skeptic in all things, and in spite of the ill that he has said of medicine to its followers, it occasionally happened that one of them would get well. How this was accomplished will be found by reading the “Essais.” “Il est des gens bien faciles à guérir puisque leur maladie n’existe pas. Combien en a rendu de malades la seule force de l’imagination!

Nous en voyons ordinairement se faire seigner, purger et médeciner pour guérir des maux qu'ils ne sentent qu'en leurs discours. Lorsque les vrais maux nous faillent, la science nous prête les siens." Perhaps the philosopher, when writing these words, forgot what man sometimes feels. We have seen how greatly Montaigne feared all diseases and how the apprehension of having a calculus was marked in him and the painful preoccupations which the constant analysis of his condition gave him. To these imaginary sick people, cure is obtained by suggestion. "Pourquoy practiquent les médecins avant main la créance de leur patient avec tant de fauces promesses si ce n'est afin que l'effet de l'imagination supplée à l'imposture de leur aposème?" Although he may have wished to mock, Montaigne perhaps did not know how truly he was speaking. Many patients at the present time are cured simply from the influence of the physician's will and the cures thus obtained are the fruit of scientific work of recent years.

Besides imaginary diseases and certain nervous affections, there are other morbid conditions in which physicians become conquerors, but Montaigne upheld that chance favored science and the proof is in the fact to call "happy," the healer who has obtained the cure. Thus men of science are always benefited by occurrences. "Ils ont cet heur que le soleil éclaire leurs succès et la terre cache leurs fautes." This sentence, renewed from the Greek, was repeated later on by Molière.

The physician never admits being the cause of the death of his patient and always lays it to the most trifling occurrences. "Il a découvert son bras, il a ouy le bruit d'un coche, ou on luy a entr'ouvert la fenêtre, ou il s'est couché sur le côté gauche." It is hardly possible to imagine a more severe criticism than the one that has been summed up in the foregoing quotations. All the arguments in favor of medicine are twisted in their turn. One should not believe in so many human inventions, the structure of the body is far too complex and it is foolish to try to take care of an organism whose mechanism is unknown.

Knowing Montaigne's opinions on medicine it is not astonishing that he should be disdainful for those who practiced the science. In the sixteenth century the barbers and the sages were not thought of like the medical profession of to-day. They often formed a part of the household of the great and in all cases they never enjoyed the respect of people of quality. Some few

patients, blinded by their confidence, conferred riches and honors upon them, but Montaigne, free of all superstition, placed them on their right footing in the social order. He had inherited from his father, and even from his ancestors, much distrust in physicians. In this family of solid Gascons, disease had little chance and it was easy for them to show their irony against these healers, who in reality were so uncertain as to their own success. "Que les médecins excusent un peu ma liberté, car par cette même infusion et insinuation fatale, j'ay reçu la haine et le mépris de leur doctrine, cette antipathie que j'ay à leur art m'est hereditaire." For that matter, this tendency had found an excellent soil to develop in in Montaigne. He was disposed to make note of the defects of a certain sect of people that he considered useless.

Physicians were for him following a routine, often leaving the reasons of their art entirely subjugated to the authority of custom and according to his way of thinking, this was a serious mistake. His mind, habituated to reasoning, could not conceive in a man the possibility of acting without having in the first place discussed his acts. Then again the diversity of opinions in medicine perplexed him; as many physicians, as many opinions.

In Italy at a small watering place, he consulted the two practitioners there, namely Donati and Franciotti, and the opinions of these two gentlemen were entirely different, consequently one can readily imagine the deplorable effect that this produced upon Montaigne. He finally felt this influence and gave up to the ideas commonly admitted, so that naturally the result was *nil*. In his "Essais" he had already raised his voice against the unceasing change in medical doctrines. "Depuis ces anciennes mutations de la médecine il y a eu infinies autres jusques à nous et le plus souvent mutations entières et universelles comme celles que font Paracelse, Fioraventi et Argentesius, car ils ne changent pas seulement une drogue ou une recette, mais à ce qu'on me dit, toute la contexture et police du corps de la médecine, accusant d'ignorance et de piperie tous ceux qui ont fait profession jusques a eux. Je vous laisse à penser où en est le pauvre patient."

This apostrophe is certainly not to Montaigne's glory. Every biologic science has undergone its evolution and medicine, more than any other, is capable of great changes. He complains himself that "l'on recoit la médecine comme une géometrie" and

he has good reason to complain, because if mathematics are eternal and if the mind of the first man was able to conceive them in their ensemble, it is quite a different matter in natural sciences. In a passage already quoted, Montaigne gives as insurmountable the difficulty of directing oneself in researches in the midst of the complex conditions of our organism. In order to simplify the question and render possible some good effects, it is necessary to have specialists. This desire was only obtained very much later, but at the present time it is fully satisfying and I am not at all sure that the author of the "Essais" would not decry the present exaggerated condition of specialism. It must be admitted that in all his diatribes there is always the ill feeling of not having been cured and this is merely human nature. It would be quite ridiculous to reproach Montaigne for this more than another. After suffering for three years without being able to help himself he started for various watering places and it is certainly some physician that must have advised him to take his trip to Italy. This did not give the expected results and in his travels Montaigne met many people suffering from the same disease as himself; he merely asks why he was ordered away and the conclusion naturally came to his mind that physicians sent their patients to watering places when they could not give them relief. This complaint was perhaps a new one in the sixteenth century, but it is a daily one at the present time.

Having heard Montaigne's critical examination of physicians and medicine it is quite important to recall the condition of medical science of his time. The Middle Ages had just disappeared and empiricism was master. In the thirty-seventh chapter of the "Essais" there is a very brilliant description of empiricism as it was then: "Le choix même de la plupart de leurs drogues est aucunement mystérieux et divin, le pied gauche d'une tortue, l'urine d'un lezart, la fiante d'un elephant, le foye d'une taupe, du sang tiré sous l'aile droite d'un pigeon blanc et pour nous autres coluqueux tant ils abusent désdaigneusement de nostre misère, des crotes de rat pulvérisées et telles autres singeries qui ont plus le visage d'un enchantement magicien que de science solide."

Montaigne, however, was somewhat carried towards the mysterious and it would not have displeased him if medicine could have been brought back to the ancient Egyptian rites and that the practitioners were somewhat sorcerers. The antithesis

between this idea and the ordinary skepticism of the philosopher is not at all astonishing, since it is daily met with among patients. With the name of Montaigne, the enemy of physicians, come the names of celebrated doctors, namely, Ambroise Paré, Fioraventi, Argenterius, Vesalius, Fallopius and Paracelsus. These men were not wanting in scientific qualities, since even at the present time they are honored. Why then did their contemporaries remain bound to his ideas? It was for this reason, namely, that in the sixteenth century true savants did not practice any therapeutics. They had understood the inanity of their efforts quite as well as had Montaigne and their rôle was well expressed by Renouard when he said: "C'est bien aux zélateurs de cette école que l'on peut adresser justement cette sentence d'Asclépiade: Votre médecine n'est qu'une méditation sur la mort."

That many physicians admire and love Montaigne is not to be wondered at and, as we have said, he has been considered by some the promoter of positivism and the tendency of his mind always brought him back to experimentation. He possessed, more than one may think, the qualities of a savant and his chapter on lame persons is an admirable theory on experimental medicine, his want of discipline conceals a method. He rejected all *a priori* formulae, only to admit the authority of the fact, and the testimony of phenomena taken at the proper time and immediately analyzed; and it may be said with truth that, if Montaigne should return to earth at present, seeing the laboratories which make medicine a true science based on precise facts, he would understand that man can act against disease and among the first he would bow before the progress accomplished. Instead of blaming Montaigne for his pretended scepticism, he in reality should be almost praised. He lived at a time when tolerance and the mind of discussion were rare things, when the best arguments were dagger thrusts, and when the most improbable causes of phenomena were presented to him, he replied: "qu'il vaut mieux pencher vers le doute que vers l'assurance, est choses de difficile preuve et dangereuse créance!"

He consequently had the patience to await the truth, knowing that time, work and experience alone would give it. He was well aware of the chaos in which scientific minds struggled and he should not be criticised for having merely given his impression. More than anyone else he was desirous of convincing himself, but he wished to be convinced absolutely. His soul

and the aspirations of his mind were far more advanced than others of his time and the only reproach that can be made him is not to have had sufficient faith in the future. Naturally one may object to numerous passages in his works where he declares that science is not truthful and, although I have already quoted some, I would draw attention to the following which appears to me more characteristic than the others. "Si me faut voir enfin s'il est en la puissance de l'homme de trouver ce qu'il cherche et si cette queste qu'il a employée depuis tant de siecles l'a enrichy de quelque nouvelle force et de quelque vérité solide. Je crois qu'il me confessera, s'il parle en conscience, que tout l'acquest qu'il a retiré d'une si longue poursuite, c'est d'avoir appris à reconnaître sa vilité et sa faiblesse."

This vain science of which Montaigne speaks was that of his time; he did not know how to generalize and he believed that the thousands of years which had gone by were a sufficient experience to establish the truth of his dictum. So much has been accomplished since 1580 that truly it would have been difficult for a man of the sixteenth century to have had a simple vision of the scientific movement of modern times. He was too rooted in the opinion that "the human mind is capable of nothing."

Since I have given the ideas of Montaigne on science, I also note a passage which throws a new light on the form of the philosopher's mind: "Bien est vrai, que les preuves et raisons qui se fondent sur l'expérience et sur le fait, celles-là je ne les denoue point." One can consequently affirm that Montaigne possessed a scientific mind and for this very reason he describes his doubts. He wanted precise facts and only demanded to see the truth and always he received for a reply the most fantastic theories. It is a serious mistake to consider Montaigne as the "classic despiser of physicians" as Dr. James has done, and he had certainly no reason for not speaking as he did. But later he changed his tone as the following passage proves: "Au demeurant j'honore les medecins, non pas suyvant le precepte pour la nécessité, mais pour l'amour d'eux-mêmes en ayant vu beaucoup d'honnestes hommes et dignes d'être aimés. Ce n'est pas à eux que j'en veux c'est à leur art, et ne leur donne pas grand blasma de faire leur profit de notre sotise, car la plus part du monde fait ainsi."

He complained that physicians believed so many simple fancies and he could not conceive, he who was a friend of experimenta-

tion, how one could adopt the practice of empiricism. To the qualities that he gave physicians he wished to add the title of savant, which for him, had a true value. He recognized that their mission was a noble one, but he was desirous of having them better fitted in order to fulfil it.

“Plutôt ne rien faire que de travailler en aveugles. Plutôt ne rien croire que d'admettre des théories,” such was the formula which may sum up all Montaigne's theories as far as we are concerned. In his admirable exposition of experimental science, in his warning not to walk blindly, one has endeavored to find a gross calumny directed against the medical profession; but Montaigne saw the evil and painted it. He did not have the audaciousness to believe in a remedy or in an amelioration, but it is another glory for him to have understood the error in which the physicians of his century had fallen. Few of them possessed his insight. Perhaps Paracelsus alone had understood the inanity of medicine of his time, but he tended towards mystical theories and took on the characters of a sorcerer and for this reason the French philosopher declared himself an enemy to his humbug ways.

Montaigne should be admired and physicians above all should be his most fervent disciples.

THE GENERAL TREATMENT OF FRACTURES.

*Read June 21, 1907, before the Medical Society of the
County of Montgomery.*

By GEORGE GUSTAVE LEMPE, M. D.,
Lecturer in Anatomy, Albany Medical College.

Mr. President, Gentlemen:

No other surgical lesion is so serious, as affecting the subsequent usefulness of the limb or the earning capacity of the individual, as a fracture. No other lesion occurs as frequently or affects so large a proportion of our population, and no other lesion is so prominently before the eyes of the public in case of a bad result. “The subject of fractures, in comparison with other surgical lesions, has not been given the amount of attention and study by the American surgeon that it deserves.” (Bloodgood.) It is only when admitted to the hospital or clinics as a bad result

for possible correction that the surgeon's interest is aroused. Clinical statistics, therefore, afford a very incomplete idea of the actual frequency and variety of fractures, as hospitals as a rule receive only the severer, rare or complicated fractures. A large number are treated by the general practitioner, and some fractures are not discovered at all at the time of the accident, such as those slighter ones of the nose, ribs, carpus tarsus, and sometimes the phalanges.

The general practitioner undoubtedly sees first practically all surgical lesions, and he should be trained to differentiate those in which expert assistance is indicated. The most important factor in the treatment of fractures, of course, is the reduction and proper adjustment of the fragments, and the proper retention of the same by proper methods. Where this is impossible, operative interference may be indicated. In some cases, even at the operation, the fragments cannot be reduced and retained properly. In such instances, especially near or implicating a joint, the fragments should be removed. Much valuable time and suffering may be saved the patient by this procedure.

Many conditions prevent the accurate adjustment in fractures, especially in those of the joints and long bones. These not only make reduction impossible, but are the cause of deformity, delayed union, non-union, neuritis, paralysis, muscular atrophy, persistent edema, loss of function and impairment of the general health. The most frequent obstacles to complete reduction of the fractures and their permanent retention are: *first*, interposition of soft parts, such as muscles, nerves, blood vessels, fascia and periosteum; *second*, contraction and retraction of normally stretched tissues, which after fracture have no resistance offered them; *third*, the piercing of adjacent muscles and fascia by sharp ends of broken bone; *fourth*, the displacement and interposition of comminuted fragments of bone; *fifth*, excessive hemorrhage and inflammation of soft parts due to infection.

1. When we have interposition of soft parts, the site of fracture should be opened and the obstacles to good union removed from between the broken ends.

2. The contraction or retraction of normally stretched muscles and fascia may cause a great deal of trouble, and operative interference may become necessary. Where we have contraction of large muscles, causing over-riding and displacement of bone, extension and counter-extension is the proper treatment. Bar-

denheuer treats almost all fractures by extension and counter-extension. The only criticism—a rather weak one, according to my judgment—which has been made regarding his appliances is that they are too complicated, inasmuch as I have found that certain fractures, such as sub-trachanteric ones in the lemur, may not be reduced and held in position except by an extension or counter-extension, with pulleys and weights. Although Bardenheuer does not get perfect anatomical results in all cases, he states that functional results almost always follow his method of treatment. Extension and counter-extension is, without doubt, excellent in most fractures of the long bones.

3. The piercing of muscles, fascia and other soft tissues by sharp ends of broken bones should, as a rule, be followed by operation at the site of fracture.

In the displacement and interposition of comminuted fragments of bone I should not advise operative interference in every case, as nature tries to take care of these fragments in her own way. (A rather unusual case came under my observation a year ago, which will illustrate this assertion: Patient's, H. W., left humerus was broken by the kick of a horse, with a compound comminuted fracture resulting. A small splinter of bone protruded from the wound, which bled profusely. Unable either to remove patient to the hospital, or to remove fragment of bone from wound, a first aid dressing for fracture was applied to the arm, using a splint of heavy wire gauze such as is furnished by the National Guard or United States Army, and a pad of absorbent cotton saturated in a strong solution of bichloride of mercury, 1-500, was placed over the wound whence the small spicula of bone protruded. The arm was placed in proper position as well as possible by the aid of the wire splint, removing the patient the next day to the hospital, where an X-ray picture was taken. The broken ends were found to be in good position. The patient seriously objecting to having the bone removed, and no rise of temperature being noticed, the splint was left on for three weeks and a half, when passive motion was instituted in the elbow and subsequently in the shoulder joint. Perfect union had taken place. The small spicula of bone, still protruding from skin on the inside of the arm, gave the patient some trouble, inasmuch as it would adhere to clothing, or to a sponge which was used in bathing. This spicula of bone gradually wore away or slipped under the skin. An X-ray picture taken some six months later

To Illustrate Dr. Lempe's Article on "The General Treatment of Fractures."

Albany Medical Annals, October, 1907.

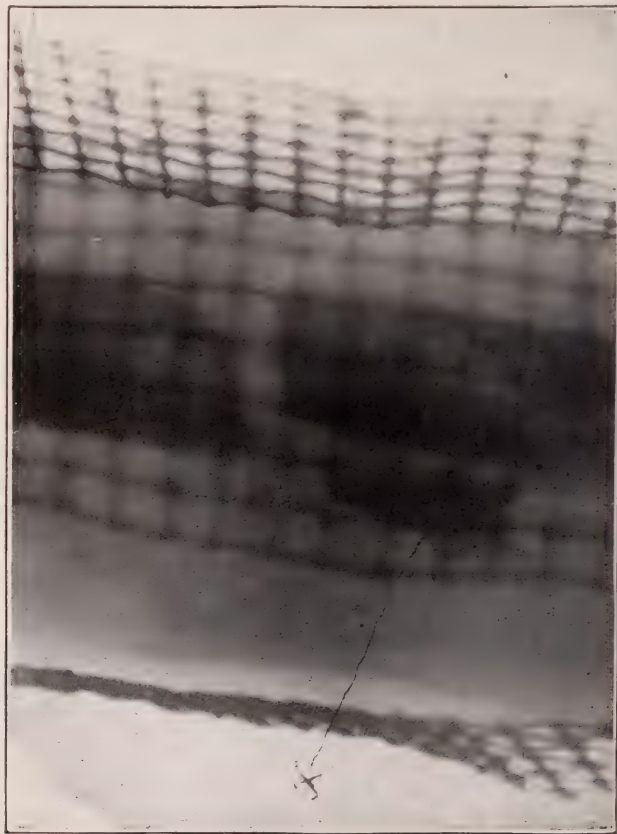


Fig. 1. Showing fracture of bone with free piece of bone resting under skin.



Fig. 2. Decalcification of fragment and remaining connective tissue mass underlying skin.

showed that decalcification of the bone evidently had taken place. The fragment, which was lying close under the skin and protruding about one-quarter of an inch, was about one and one-half inches in length by three-quarters inch wide by one-half inch thick, as nearly as could be made out by skiagram and palpation. Ten months later it was discovered by skiagraphic examination and palpation that we simply had remaining a decalcified mass of connective tissue underlying the skin.) (*Vide Skiagraphs.*)

5. As to excessive hemorrhage, Cornil and Coudray claim that it is detrimental to the healing of bones, as it presents a large field for infection. The ordinary amount of hemorrhage which takes place at the site of fracture is necessary to its healing. Bier, in *Centralblatt für Chirurgie*, has demonstrated from clinical observation and experiments on delayed bony union and pseudoarthroses that the ordinary blood effusion is a factor of great importance in aiding the production of new bone. We know that after a bone is broken the small capillaries of the connective tissue, periosteum, endosteum and bone spaces are filled with an excess of blood which forms a clot around the fractured bone. The blood clot becomes organized by granulation tissue. Bone-forming cells—the osteoblasts and osteoclasts—become active in the calcification and ossification of this granulation tissue and firm union of the fractured ends takes place.

That fragments of bone in a comminuted fracture are drawn into the callus and healed into the line of fracture to be absorbed and new bone formed in their place, or remain as a living part of that bone, has been demonstrated. Prominent fragments of bone not drawn into the callous are rounded off by absorption. This has been proved macroscopically and confirmed by microscopic examination, in experimental fractures and bone transplantation in animals. (The case mentioned above is a good example of the absorption of bone by the surrounding soft tissues by retrograde metamorphosis.) Regeneration, *i. e.*, growth of bone, is dependent upon the periosteum, the calcified bone itself, the cortex, is practically inert.

In cases of extensive destruction of bone (due to osteomyelitis, tuberculosis, etc.) advantage of the periosteum may be taken to grow even whole diaphyses, or shafts of bone, as shown by Nichols, of Boston. The main factor being that the two folds of periosteum be brought closely together without a central cavity. In this way, ulnas, radii and tibias have been regrown between

the approximated periosteum. The notable thing about this regeneration of bone is that the bone so grown is exactly like unto the piece or shaft of bone removed, due, no doubt, to heredity, environment or function, the new bone being formed in the shape which performs function to the best advantage. This is true even of very complicated bones, or even complicated joints, which were excised sub-periosteally.

The question might be raised, inasmuch as the periosteum is the principal factor in bone formation, if a fragment of bone should become separated from the site of fracture with a detached piece of periosteum adhering to it, what would result? Pieces of bone with adherent periosteum, and also pieces of periosteum, have been implanted in different soft parts of animals, with the result that at first new bone was formed in each instance and persisted for a time; that then resorption, decalcification of the bony substance and absorption of the cartilaginous portion took place, and only a small connective tissue mass remained.

Frequently bony union is retarded, notwithstanding that the bones are in exact position for healing. We must then look for the cause in the general condition of the patient. Syphilis, tuberculosis and anemia are the principal agents working for non-union in this instance. Thyroid extract has been advocated in this class of non-union. Bier advocated the injection of fresh blood at the site of fracture. Bone drilling has been employed (by some with good results), not forgetting the older method of rubbing the ends of the broken bone together, in both instances getting an effusion of blood to the broken ends of the bone, stimulated the formation of a callous and the formation of calcareous deposits.

One of the greatest helps to the treatment of fractures has been the X-ray. The reading of skiagraphs is very readily learned, presupposing a good working knowledge of anatomy and the knowledge of the healing of tissues in fractures. "One may have a good mental picture of the fracture (and it was with this aid alone that fractures were treated before the advent of the X-rays) and yet one's mental picture will be frequently proved a false one when seen by the X-ray"—(Bloodgood). The X-ray confirms the diagnosis and it helps us to arrive at a correct conclusion when in doubt. About ten years ago the Roentgen ray examinations were taken up. A good many expectations regarding them have been fulfilled, and a great many surpassed. Again, we must

acknowledge that in a large majority of fractures diagnosis can be made, treatment instituted and a good result obtained without the X-ray. Years of experiment have proved this. It is the endeavor of modern surgery, however, to obtain the best possible results in every case by the aid of newer instruments of precision. "Properly employed, the X-ray will not blunt the diagnostic sense any more than the microscope will blunt the power of making a diagnosis of a pathological lesion"—(Bloodgood).

The functional impairment due to the formation of adhesions after a fracture has led a number of surgeons to announce the dogma that the treatment of the soft parts surrounding the bone is the most important part of the treatment. I believe that the pain and stiffness of the joint are nearly always due to the matting and adhesions of the soft parts at the site of fracture, and in a great measure to atrophy of the muscles, the sure result of long and constant immobilization, and not entirely the result, as has been believed for years, of intra-articular changes. (I might mention here that in animals as well as in man the size, strength and solidity of the bones are in direct proportion to the volume and strength of the muscles; hence the claim that with an atrophy of the muscles we get a concurrent and subsequent atrophy of the bone seems reasonable and probable.) A series of X-ray pictures of the humerus (taken by Dr. Holding at the Albany Hospital) of cases where we had a long standing atrophy of the muscles of the arm, showed on comparison a marked atrophy of the bone.

Great displacement of fractured ends of bone frequently interferes with good union, although in some forms of fractures, as in the clavicle, we have good results with considerable overlapping and comminution of the bones. The *details* of treatment are of great importance in the ultimate results. Early massage and passive movements enable us to avoid many of the unfavorable complications due to absolute fixation. Massage before and after reduction of the fracture finds advocates in Carl Beck, Cotton and others. Massage at the earlier stage is advisable in selected cases only, in my experience. Extreme mobility of the fragments, and the possibility of reproducing displacement of the fractured ends of bones are contra-indications of massage before reduction and during the early stages of treatment. In fractures of the olecranon and patella early movements are contra-indicated except where operative interference has taken place.

The advantages of early massage are that the adhesions, between adjacent structures and the bone, are not so apt to form or are prevented from becoming organized, as the so-called plastic lymph, which gives rise to these, is removed. The immobility that permits the formation of adhesions is obviated by daily movements instituted as early in the treatment as possible. These movements, of course, should be passive at first.

The wasting of muscles, stiffness of joints, weakness of the limbs and pain on attempting movements, are phenomena which we have all observed on the removal of splints. These are due to the length of time the soft parts have been held immobilized. I should therefore advise an early removal of fixation splints and appliances. I have removed splints from Colles' fractures in fourteen to sixteen days, commencing massage and passive motion, already ten or twelve years ago, without injuring site of fracture, and with good functional results following in the majority of cases.

To seek at all costs to get a good anatomical result is often to strive for the unattainable, whilst sacrificing what should be the true object of our treatment—complete restoration of function. In many fractures no apparatus, however rigid, can be applied firmly enough to maintain perfect the fixation of the fragments. "The mechanism unfortunately cannot be applied to the bone direct, but only through the medium of the soft parts surrounding the bone, which by their nature are unfitted to bear without injury the necessary amount of pressure." (Cotton).

Absolute immobility is not necessary to the healing of fractures. This is shown by the healing of fractured clavicles, very few of them being held absolutely and firmly in place; proved by the healing of broken ribs, which are disturbed by every intake of breath, and again demonstrated by the healing of broken femurs, which when treated by Buck's extension allow considerable movement; still we have good functional results in these cases.

Now as to the special method and means for setting fractures, I may quote that "Every fracture is a law unto itself." Each one should be reduced and held in position by the splint or appliance which promises the best result, basing the treatment on the anatomy and that of the surrounding structures. It would carry me too far to give an outline of treatment of the different varieties of fractures, employed by myself, which has given me the best results during the last nineteen years.

The mechanical ingenuity of generations of surgeons has been expended in devising methods, splints, apparatus and appliances, more or less complicated, for the treatment of fractures, and still new ones are brought forward every year, not that a great number of them are any better than the old proved and tried ones. The very number and variety, nevertheless, would indicate that the absolutely perfect one has not been discovered as yet. I agree with Beck that in no other form of surgery are the apparent shortcomings of the doctor brought before the public and so cruelly judged, as in a deformity or a loss of function following a fracture. The patient does not take into consideration the nature and circumstances attending his own case, but simply compares his with that of his neighbor's, treated perhaps by a simple bone setter. His may have been a comminuted joint fracture, whilst the neighbor's was a non-complicated simple fracture which healed in spite of treatment.

REMARKS TO THE GRADUATING CLASS OF 1907 OF
THE TRAINING SCHOOL FOR NURSES IN
THE ALBANY HOSPITAL.

By MARCUS T. HUN.

*Ladies of the Training School and Young Ladies of the Class
of 1907:*

"Hippocrates, the Father of Medicine, before he would admit a candidate into the ranks of his disciples, bound him by an oath to lead a pure and honest life, never to prostitute to any base use the knowledge which was imparted to him, and to devote himself, in the exercise of his profession, to the service of his fellow-men with fidelity and zeal." As auxiliaries and most important aids to that profession, venerable in its antiquity, venerated for its learning and invaluable in its succor and service to mankind, I welcome you to-night. I congratulate you that you have chosen a career so noble in its purposes and so ennobling in their pursuit. Henceforth you are enrolled in that great company of the Healers of Men, which throughout all the generations of the human family has assuaged its sufferings and solaced its sorrows.

It would seem more fitting that some member of that great profession, and not a lawyer, should express to, and impress upon you the obligations which you have assumed and the oblations which they impose upon you. For possibly you may not be without sympathy with that antiquarian, who, finding in a New England churchyard a much-defaced monument, deciphered on the upper part of the stone the words "an eminent lawyer," and near the bottom the words "an honest man." "It is strange," he said to his companion, "that two men should have been buried in one grave;" or with that cynical citizen, who, overhearing it said, "An honest lawyer is the noblest work of God" remarked, "and the scarcest." I have no purpose to extol the virtues, or excuse the shortcomings of my profession. I may, however, repeat these words, imputed to Warren Hastings when on trial before the English parliament for maladministration in the government of India, "When I consider the opportunities which have been open to me, I am only astounded at my own moderation."

In one respect at least our professional conditions are alike—in opportunities for undisclosed wrongdoing. In your care and attention to your patient, as in mine to my client's case, we each are called upon to act in matters where it is given only to God and to his angels to be lookers on. If you would avoid fault and failure, make for yourself a definite plan in life; clarify it with the inspiration of a clean character; ennoble it with high purposes and worthy thoughts; endow it with every grace and charm which will add attractiveness and interest to your personality and to your profession; let it be a guide and a God to you, and leaving all other Gods, cleave steadfastly to it. Make for yourself a path so clear, hedge it with resolutions so resolute, that you may not wander from it into by-ways and side-paths of discredit and dishonor. Finally, clothe it with a persistent purpose—patience and pertinacity.

This is the first essential to success in any phase of life. Experience may detect error. Circumstances may compel compliance with conditions which you cannot overcome. You may not attain to all you attempt, but without the attempt you will attain to nothing. Into this fabric of your future life, incorporate three great qualities: Reticence, Rectitude and Religion.

With what does not relate to your duty and devotion to your patient, do not concern yourself. You will learn many secrets of family infirmities—and some of infamy. As to these let your

silence be that of the grave. You will have many confidences from the weak and wandering minds of your patients. If you would inspire them with trust in you do not betray to one what you have thus learned from another.

Be helpful to others; but not self-assertive. Your silent devotion to duty will impress your character and competency upon others with a mute persuasion and power which no words can equal. It is not given to any of us to comprehend those mystic and unmeasured influences, silent and unseen, which we exert upon others.

I heard some time since the story of a little child in a manufacturing district of England. Born into poverty and into the sordid and slovenly conditions which too often attend it, she lost at an early age both of her parents. An uncle whose condition in life was no better than her own reluctantly received her into a home in which she appeared to represent only an added burden to an already over-burdened existence. Through want of proper care she had acquired a spinal disorder which prevented her walking, except with difficulty and distress. She had, however, a brave heart in that poor disordered body, and she entered cheerfully upon a life thus dismal in its prospects and disheartening in its possibilities. The little home grew cleaner under her industry, and the food, coarse as it was, more savory and appetizing; the little courtyard in front of the house was cleared of the litter and rubbish which had covered it, and gradually a little garden took their place. A vine grew up and covered the side of the dilapidated house, through which the cleaned glass of the windows looked out with an unwonted freshness. The neighbors saw this restless little figure moving about, and the transformation she had effected in the dreary home which had preceded her arrival. They saw her on the doorstep as she bade good-bye to her uncle as he departed in the morning, and gave a glad welcome to him on his return at night. They noticed that even his coarse, clumsy nature was touched by the tenderness of the child, and was transfigured into a certain uncouth grace. Some of the people of the better sort followed the example thus set them, evidenced here and there by a patch of green and a struggling plant; and at times the uncle found upon his workbench some simple gift left there, for the little stranger, by an unknown friend. She lived for the most part by herself, for the service of the household gave her no time and her infirmity no fitness for

active intercourse with others. Gradually her health failed, and at last that brave little spirit, so badly tenanted here in this mortal body, passed out of it and into the life hereafter. And in that rough community four hundred men, into whose lives the influence and example of her life had entered, followed that little body to its grave, and paid this last tribute to one, by whom, to most of them, no spoken word had ever been uttered.

Rectitude is another essential to your success. In most conditions in life the watchful eye of the employer quickly detects defects and deficiencies of service. In many conditions of your patient he will be able neither to appreciate the efficiency nor resent the insufficiency of your service—be honest.

Remember that you are an important factor in the equation by which the problem of life and death is to be solved. The surgeon may operate or the doctor prescribe with consummate skill and comprehension of the case, yet the measure of your service and devotion to the patient will often determine the final event, and make a successful issue possible or impossible of attainment.

There was a time in the knowledge of astronomy when each star in the great galaxy of the heavens was supposed to stand by itself, independent of all others. To-day we know that they are all held together with a force which assures to each its allotted orbit. That the power of gravity which exists in each, however apparently small and insignificant, is essential to the orderly course and conduct of all, and to the harmony of the heavens. Each star has its appointed function and its designated place in the system of the cosmos. If it fails in that function or wanders from that place, it jeopardizes creation. As in the physical, so in the moral world, "God gives to each one of his creatures a separate mission, and if we discharge it honorably, if we quit ourselves like men and follow faithfully the light which is in us, removing from it all cold and quenching influences, there will assuredly come of it such burning as in its appointed mode and measure will shine before men and be of service constant and holy. Degrees infinite of luster there must always be, but the weakest of us has a gift, however seemingly feeble, which is peculiar to him and which worthily used will be a gift also to his race forever."

Be content, therefore, to use the power and position that is given you to add one stone to the landmark which your day and

generation shall place in the realms of Medical Science, although your own name may not be engraved upon it.

The Christian religion, whatever it may be to man, must ever to woman be an object of reverence and adoration. Her sanctity found no place in heathen philanthropy. Admired and idolized as long as she preserved her charm of manner and her grace of person, when these departed her power and her protection from indignity and neglect departed with them. But in Christian charity, even that sinner against the most sacred of all social compacts, condemned by the Jewish law to be stoned to death—the fallen Magdalene—found the forgiving sentence, “Hath no man condemned thee—then neither will I condemn thee. Go and sin no more.”

You who comprehend the potency of that mysterious cell in which lies the invisible protoplasm of life, who realize and see in its development the evidences of each experience in all the ages of the past, as life has advanced from that sodden sponge-like substance into the complicated body and the delicate organism of the mind of man. You who look up into the heavens, at those great bodies emerging from “nebulous potentiality into endless growths of sun and planet and satellite, through all varieties of matter, through infinite diversities of life and thought, possibly through modes of being of which we neither have a comprehension nor are competent to form one, back to the undefinable latency from which they arose.” You who see in the most minute and in the most majestic of created things the masterhand.

With you I have no need to argue that behind all this there stands a personality and a purpose, call it and clothe it as you will. In Christianity, the bright consummate flower of our own civilization, the approach to that Creator is through His creatures. “He who gave the cup of cold water to the disciple, gave it to the Master, and he who received the Master received the Eternal Father who sent him.” “I was sick and ye visited me” for “inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me.”

In the mission of mercy upon which you have entered, it may at times be given to you to bring light into darkened and despairing souls, in moments of despondency, in the hour of dread of that dark valley of the shadow of death, of its fearful loneliness,

for of all the great company that enters there, no two ever go together.

To quicken with the impulse of a better motive the derelict and degraded of mankind, and through the saving grace of your persuasive influence to guide them to a purer purpose and a cleaner life.

To cheer and cherish those, to me the most pathetic of them all, who, having outlived their natural powers, their friends, and fortune's favor, still linger on apparently forgotten by their God. To assuage the anguish of their bereavement in the loss of "the touch of a vanished hand and the sound of a voice that is still" until they also shall "wrap the drapery of their couch about them and lie down to pleasant dreams," to awaken in that land "from which no friend ever goes forth."

Clinical and Pathological Notes

An Efficient and Inexpensive Apparatus for Use in Chronic Subluxation of the Shoulder. By J. M. BERRY, M. D.,
Orthopedist to the Samaritan Hospital, Troy, N. Y.

The apparatus here pictured and described was designed to meet the requirements in a case of chronic subluxation of the shoulder joint, following a brachial plexus paralysis. It is not essential to give a detailed history of the case, but the salient points were as follows:

The patient was a man aged about forty years, and gave the history of having received a severe injury to the right shoulder which had resulted in a brachial plexus paralysis on that side. At first the paralysis was practically complete, but later, under treatment by massage and electricity, there had been considerable return of muscle function. At the time the patient was referred to me many of the forearm movements could be performed and there was some arm motion possible; the deltoid, however, remained paralyzed. There was strong reason for thinking that with continued treatment there would be much more return of function to the paralyzed muscles.

To Illustrate Dr. Berry's Article on "An Efficient and Inexpensive Apparatus for Use in Chronic Subluxation of the Shoulder."

Albany Medical Annals, October, 1907



Fig. 1



Fig. 2



In the meantime, however, the paralyzed muscles around the shoulder were not able to support the weight of the arm, and as a consequence a condition of chronic subluxation of the shoulder joint was present. The condition is well shown in Fig. 1.

It can be readily understood that had this condition of subluxation been allowed to continue the muscles and ligaments around the shoulder would eventually have become so stretched that there would be danger of the condition becoming permanent even though the muscle function might be restored. It was, therefore, imperative for the patient to wear some form of apparatus which would relieve the weight of the arm on the shoulder and prevent the subluxation.

The patient could not afford to buy one of the expensive forms of apparatus that have been devised to relieve similar conditions; and moreover his work was such that it was at times necessary for him to use his affected arm. The following described cheap and efficient apparatus was devised:

The apparatus was made in the form of the third roller of a Desaults' bandage for the shoulder, buckling together in the front and the back, as shown in Figs. 2 and 3, a, b, c, and d. In putting on the apparatus a, b, and c are left unbuckled, and after these are fastened the arm is raised the desired amount by tightening the buckles c and d. When in position the apparatus effectively supports the arm and reduced the subluxation.

When it is necessary for the patient to use his affected arm, with his free hand he can unbuckle the apparatus at (b) and slip his elbow out of the support; thus leaving the arm free. When his work is finished, he can slip his elbow back into the support, rebuckle the apparatus at (b) and the arm is supported and the subluxation reduced as before.

The apparatus was made of cotton duck straps three inches wide and reinforced with leather where they crossed. It was put together by a harness-maker and cost in all \$2.50.

Editorial

But Physician was a composed man, who performed neither on his own trumpet, nor on the trumpets of other people. Many wonderful things did he see and hear, and much irreconcilable moral contradiction did he pass his life among; yet his equality of compassion was no more disturbed than the Divine Master's of all healing was. He went, like the rain, among the just and unjust, doing all the good he could, and neither proclaiming it in the synagogues nor at the corners of streets.

As no man of large experience of humanity, however quietly carried it may be, can fail to be invested with an interest peculiar to the possession of such knowledge, Physician was an attractive man. Even the daintier gentlemen and ladies who had no idea of his secret, and who would have been startled out of more wits than they had, by the monstrous impropriety of his proposing to them "Come and see what I see!" confessed his attraction. Where he was, something real was.

Little Dorrit.

CHARLES DICKENS.



That medical teaching is far from the degree of perfection desired is easily apparent from the active discussion of methods. The didactic lecture has been most in question, and with the great advance in clinical teaching of the last few years, bade fair to be condemned. But the need of a systematic and orderly course of instruction is paramount, and this will probably be attained only by the intelligent combination of all the resources within the reach of the colleges. Six years ago Dr. Hun prepared for his students in the Neurological Course in the Albany Medical College, two volumes entitled, "A Syllabus of a Course of Lectures on the Diseases of the Nervous System," and during the last month the Second Edition of Volume One, on "Diseases of the Nerves, Spinal Cord, Brain Stem and Meninges" has been issued. This is a handsome royal octavo volume of nearly four hundred pages, illustrated by line engravings in black and in colors, and by photo-micrographs. The page contains in print the captions, which may be regarded as the synopsis of paragraphs, and under these are blank spaces for note-taking, that

the student may for himself complete the text. He thus not only follows the line of reasoning of his preceptor, but carries away for permanent reference each course of lectures and demonstrations in a completed treatise, the creation of which has been largely his own.

Above the merely mechanical aspect of these books lies the evidence of the teacher's earnest purpose to impart knowledge, at no economy of personal effort, and with the sole object to fulfill the highest obligation implied in this most important of all duties. A complete course of instruction should have design and orderly arrangement. It is not always possible to present an illustrative case in person at the proper point, and some independent oral instruction must be given. With the syllabus as a guide, patients, models and the screen may be so utilized as to round out a course and to bring into the student's mind a properly systematized arrangement of the subject. This does not eliminate, but elaborates the didactic lecture so that it becomes something more than an oration, and as it purports, actually teaches.

Little Biographies

XXII. LIEBERKÜHN.

JOHAN NATHANEAL LIEBERKÜHN was born in Berlin, September 5, 1711. His father having decided in favor of the ministry, for three years, first in Halle, later in Jena, he applied himself to theological studies. Attracted, however, by the mathematical-physical lectures of Hamburger, he took up the study of the natural sciences. His interest in this study was later increased through contact with Wedel and Lehmeyer who, together with Hamburger, fostered his scientific zeal and encouraged him to study medicine. In the year 1733, however, his father persisting, he betook himself to Rostock to further prepare himself for entrance into the ministry. Very soon after, before his ordination, his father died. Freed from all constraint, he determined to devote himself entirely to

the natural sciences. After an extensive journey through Germany he went to Leyden, where he studied under Boerhaave, Albinus and Gaut, and in 1739, after his inaugural dissertation, "De valvula coli et usu processus vermicularis," received his doctor's degree. Later he visited London, where, after the presentation of anatomical specimens, he was elected a member of the Royal Society. After a short stay in Paris he returned to his native city and established himself as a practicing physician. He was made a member of the medical faculty. In October, 1756, he died.

Lieberkühn combined with an uncommon gift of observation a remarkable technical ability. This enabled him to perfect for his anatomical studies certain necessary instruments, for instance his anatomical microscope. With the exception of his inaugural dissertation and the description of the microscope used by him for anatomical study, and a method for the histological study of the intestines, which appeared in the proceedings of the Berlin Academy of Science, he published only the excellent article concerning the intestinal villi (De fabrica actione villorum intestinorum teruim, 1745).

In this article, Lieberkühn described for the first time the glandular structures which have since borne his name. He is no less renowned for his beautiful preparations of injected blood vessels. The four hundred specimens which, after his death, came into the possession of Biereis, and which were later distributed among various museums, are still in an excellent state of preservation.

L. K. BALDAUF.

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Scientific Review

REVISION OF THE APHASIA DOCTRINE,

BY PIERRE MARIE,

Associate Professor at the Faculté de Médecine of Paris.

SUMMARIZED, AND IN PART LITERALLY TRANSLATED, FROM THE
AUTHOR'S ORIGINAL MONOGRAPHS,

BY LA SALLE ARCHAMBAULT,

Lecturer on Neurology, Albany Medical College;

Neurologist to St. Peter's Hospital, Albany, and to the Troy City Hospital.

Marie has published within the last year a series of articles in which he severely criticizes the circumstances which attended the genesis of the classic doctrine of aphasia and vigorously combats the views actually accepted on the cortical distribution of the various centers concerned in the physiology of language.

After ten years' experience as physician-in-chief of the Hospice de Bicêtre, during which the author has had occasion to methodically examine clinically over one hundred patients presenting aphasia and to carefully study the lesions found at the autopsy of more than fifty of the cases, Marie is led to contend that the whole question of cerebral localization rests on a purely theoretic basis, on mere schematic construction. A most striking illustration of this fact, is afforded by a study of the circumstances which led Wernicke to localize in the posterior part of the left first temporal convolution, the receptive centre for memories of spoken language. In arriving at this conclusion, Wernicke had been influenced by Meynert's description of the course of the central acoustic tract, which, according to him, would terminate in the Insula of Reil and in the first temporal convolution. But to this day, no anatomic document has afforded reasonable evidence of the correctness of Meynert's conception and nothing justifies the supposition that the centre for hearing is located in the first temporal gyrus. Never has a lesion of this convolution in the right hemisphere (which lesion is by no means rare) caused the slightest disturbance of hearing on either the right or left side.

In order to acquire sound notions of so important a question as that of aphasia, one must with unprejudiced mind weigh the facts as they occur, and rely above all on the old method which

combines clinical observation and anatomic study, and which, when judiciously applied, leads no one into error.

The first cardinal principle of Marie's doctrine is, "that there exists in every case of aphasia a more or less marked impairment of the power to understand spoken language." It is because the degree of this impairment is very variable that it often passes unnoticed, and to appreciate it in mild cases, one must naturally resort to more complicated tests than those ordinarily employed in the study of typical sensory aphasia.

The author states that no aphasia patient can execute in its entirety either of the following orders:

A. Here on the table are three pieces of paper of unequal size; give me the largest, crumple up the middle-sized one and throw it on the floor and put the smallest in your pocket.

B. You will rise from your chair, go and rap three times on the window-pane, then come back, walk once around your chair and resume your seat.

That the failure to perform correctly the above-named tasks is not dependent upon the patient's inability to understand what is said to him, *i. e.*, that it is not simply a question of so-called word-deafness, becomes at once evident, if the order be decomposed and the patient requested to execute each part separately. One sees then that the patient carries out perfectly any simple order given him; in other words, he possesses fully the notion of words as such, and it is only by multiplying their number, by complicating the nature of the test that the patient becomes confused. Another proof that this incapacity is not dependent upon an imperfect comprehension of words spoken, is that the patient is equally unable to repeat the series of acts in either test even though the examiner, after having drawn his attention, goes through the motions himself.

Taking all these facts into consideration, Marie comes to the conclusion that in the pathogenesis of aphasia there is an underlying factor of much greater significance than mere word-deafness, namely, a marked impairment of the intellectual power generally. He is of the opinion that this mental impairment should be considered the dominating feature of aphasia, and he wonders at the fact that so striking a symptom should have been so completely ignored.

There are still other means of appreciating the reality of the intellectual deficit present in aphasia. It is certainly not owing

to word-deafness that the aphasic musician can no longer not only compose or read music, but even play from memory pieces which were once familiar. Again, are such patients often unable to tell the hour or to correctly place the hands of a watch upon a given hour; likewise are they utterly incapable of doing the slightest problems in addition or subtraction.

Marie relates that he has even tried an experiment along coarser lines of study, by asking a patient, who once had been an accomplished chef de cuisine, and whom cerebral hemorrhage had driven to less appetizing quarters, to prepare a dish of fried eggs. This the patient proceeded to do in the very kitchen-room of the clinic before an audience composed of the examiner, his internes and pupils and under the close and unrelenting eye of the matron, herself an adept in culinary art. The result of the aphasic's effort was a horrible mess, due, the matron explained, to the patient's total disregard of the rules established regarding the order in which the various ingredients should be added. Despite the uninviting aspect of his dish, the chef did not seem very much concerned or even perplexed, which fact renders the preceding narrative even more significant and plainly shows that in such a case, it is not the faculty of speech which is at fault but that there is an undeniable impairment of the intellectual power.

As to the localization of the motor speech center in the posterior portion of the left inferior (or third) frontal convolution, Marie finds himself forced, after carefully analyzing the results of his personal anatomic and clinical investigations, to plead the falsity of this doctrine. His main arguments are two in number:

(1) Cases have been observed in which a destructive lesion limited to the posterior part of the left third frontal convolution had not determined, in right-handed individuals, any aphasic disturbances. The number of such cases, it is true, is rather limited (for reasons to be given later), but the question of number in this connection is far less important than that of quality and if absolute precision be assured, the demonstrative value of such cases is unquestionably very great.

(2) Perfectly typical cases of motor aphasia have come to autopsy in which the left third frontal convolution has been found absolutely intact. A fair number of such cases has been reported

by different authors, notably by F. Bernheim in his important thesis and by Touche. Marie has himself observed several cases.

If just consideration be given to these two categories of facts, the conclusion which one very naturally infers is, that the left third convolution plays no particular part in the physiology of speech.

Marie recognizes the fact that in direct opposition to this view, based on only a few contradictory observations, stands the great number of cases in which aphasia coincided with a lesion of the third frontal convolution, and he further states, that in about half the cases of Broca's aphasia which have come under his personal observation, he was able to verify this fact. But, as he very logically remarks, there still remains the all-important question of correct interpretation. He calls attention to the necessity of bearing in mind, the *modus operandi* of the various vascular changes concerned in the production of lesions associated with aphasia. The lesion most frequently observed in aphasia is softening resulting from obliteration of the Sylvian artery. Whenever occlusion of this artery takes place at some point preceding that from which arises the branch destined to the third frontal convolution, it necessarily follows that this convolution is involved in the process of softening as well as are those which border on the Sylvian fissure. But this implication of the third frontal convolution is of little consequence, being given, that most marked cases of aphasia do present in which this same convolution is found to be absolutely intact. Its lesion therefore, can only be regarded as an extension of the main focus more posteriorly situated, owing to the more widespread involvement of the cortex which occurs whenever the Sylvian artery is obliterated below the point of origin of its cortical branches.

Having maintained that the actual conception of sensory aphasia is inexact and refused to admit the localization of the motor speech centre in the left inferior frontal convolution advanced by Broca, Marie nevertheless willingly admits and even insists upon the fact that clinically Broca's aphasia and Wernicke's aphasia constitute two unquestionably distinct syndromes. He therefore considers himself called upon to express his views on the pathogenesis of these clinical varieties. To avoid all possibility of misinterpretation, he gives in the first place a brief definition of the clinical terms: Wernicke's aphasia, Broca's aphasia and anarthria. In both varieties of aphasia, there is

alexia and agraphia, as well as difficulty in the comprehension of spoken language, but in the one (Wernicke's aphasia) the patient speaks, often too much, incoherently always, whereas in the other (Broca's aphasia) he speaks very little or not at all; it is therefore, the presence or absence of articulate speech which constitutes the essential differential point between these two main varieties of aphasia.

By anarthria, is meant the loss of the power to articulate; it may be complete or partial, when it is called dysarthria; whatever speech the patient retains in the latter case being for the most part very indistinct and often unintelligible. In certain instances of focal cerebral disease, the anarthria may reach such an extreme grade (the patient being almost totally deprived of speech), as to be easily confounded with Broca's aphasia; but it differs from the latter, in that the patient is able to read and write, understands perfectly even complicated phrases and can moreover indicate by signs or gestures (expression of syllabic and literal quantity, etc.), the words which he is unable to pronounce. It is to this very clinical syndrome that Déjerine applied the term "Subcortical Motor Aphasia."

Marie remarks that, as was previously demonstrated by Pitres, anarthria, as the sole manifestation of a disordered function of the centres for language, does not mean aphasia, but belongs rather to the type of speech disturbances occurring in pseudobulbar paralysis. It is this very anarthria, which, when combined with the several symptoms (alexia, agraphia, etc.) constitutive of aphasia, realizes that clinical variety called motor or Broca's aphasia. As Marie puts it, Broca's aphasia = aphasia + anarthria.

What is the anatomic localization of the lesions which correspond to these various clinical syndromes? The seat of lesion in anarthria affords actually no cause for controversy and is almost universally considered to be in the domain of the lenticular nucleus; either in the substance proper of this nucleus, in the anterior limb and genu of the internal capsule, or in the external capsule. A fact to be noted is, that anarthria occurs not only in lesions of the left hemisphere but also in lesions involving the lenticular area of the right hemisphere. This peculiarity in the pathogenesis of anarthria is one of capital importance in differentiating it from aphasia, which, on the contrary, is strictly dependent upon a lesion of the left hemisphere. Another differ-

ential point worthy of note, is the tendency of anarthria, when due to a unilateral lesion, to spontaneously disappear either totally or at least in great part.

When it comes to the question of giving aphasia an anatomic basis, Marie speaks of "aphasia" as being one, as constituting a single and well-defined clinical entity; variations presenting, of course, as regards both the intensity and completeness of the symptomatic picture, which may be further modified by the co-existence of additional symptoms. It will be remembered that Marie considers Broca's aphasia as being simply: aphasia complicated by anarthria, or, as the case may be, anarthria complicated by aphasia.

With this clinical view as a working basis, it must necessarily follow that the seat of the causative lesion is also *one*, and Marie maintains that such is the case. According to him, the one area, the involvement of which determines aphasia, is the so-called "region of Wernicke," which comprises the supra-marginal and angular gyri and the bases of the first and second temporal convolutions. It is well to note that it is this same region which Flechsig has designated as an important "association centre;" a fact, Marie both utilizes and strengthens by pointing out that in the genesis of the speech-disorder of aphasia, the defective association of ideas plays an important part.

Marie considers that it is a gross error to attempt to subdivide Wernicke's area into so many smaller centers presiding over individual functions, such as storing up auditory memories of words or memories of visual impressions, etc. His reason for this is simple enough. The lesions observed in cases of aphasia are never limited to the cortex, but invariably destroy, to a greater or lesser extent, the underlying white matter or subcortical substance; so that, even should the above-named specialized centres exist (which fact is far from proved), the implication of the white substance would render it extremely difficult, if not impossible, to appreciate their relative topographic distribution. The involvement of the subcortical substance means interruption of fasciculi coming from, or going to, other centres or regions, either adjacent or remote. That this very involvement of the subjacent territory constitutes a very great source of error (hitherto apparently overlooked), there can be no doubt.

Returning to the question of localization, Wernicke's area is the seat of the causative lesion of aphasia in general and of

sensory aphasia in particular. From this anatomic landmark to the localization of the lesion concerned in the production of Broca's aphasia, there is but one step. As Marie expresses it, motor or Broca's aphasia = aphasia + anarthria, hence, the lesion which determines this clinical variety of aphasia must be the combined lesion of the one and the other, *i. e.*, it involves Wernicke's area or the fibers derived from it and the region or vicinity of the lenticular nucleus. This association of lesions is most commonly realized in cases of softening following obliteration of the Sylvian artery.

Such is the pathogenesis of Broca's aphasia, the combination of the lesion which determines aphasia with that producing anarthria. The process of softening may assume either of two very distinct aspects, according as the cerebral cortex is or is not involved.

A. Cortical type, in which obliteration of the Sylvian artery takes place at either of two points:

(1) Immediately after its origin from the Circle of Willis, when there follows total destruction of the middle two-thirds or three-fourths of the left cerebral hemisphere, involving the central ganglia, the surrounding white substance, the third frontal convolution, the Rolandic convolutions, the supramarginal and angular gyri and part of the first and second temporal convolutions.

(2) At some point intermediate between the anterior perforated space and the point of origin of the branch supplying the third frontal convolution, in which case, the lesion has the same appearance as the preceding as regards the extent of cortical involvement but differs from it in respecting entirely the basal ganglia.

B. Subcortical type; deep-seated lesion.

This form of softening is relatively frequent and determines as complete a type of motor aphasia as that which results from the cortical variety. The obliteration no longer occurs in the main trunk of the vessel (in the Sylvian artery itself), but in one of its branches of bifurcation and usually beyond the point of origin of the branch going to the third frontal convolution. The branch affected is that which supplies the angular, the supramarginal, the first and second temporal convolutions; as the other branch going to the Rolandic convolutions remains permeable, these convolutions may not be at all involved. One would

naturally suppose that this type of lesion would give rise clinically, to ordinary sensory aphasia, being given, that the area affected comprises only the angular, the supramarginal, the first and second temporal convolutions—and yet in such cases, it is unquestionably motor aphasia which has been observed during life. This apparent contradiction is at once explained, if horizontal sections of the affected hemisphere be subjected to close study; it will then be seen that the lesion involves the isthmus of white matter which joins the parieto-occipital lobe to the region of the basal ganglia, that it extends into the retrolenticular area and even along the external capsule, occasionally invading the lenticular nucleus itself. This deep-seated process which, in the absence of cortical involvement might easily pass unperceived, is to be explained on a purely anatomic basis, by the fact that the branch of bifurcation of the Sylvian artery gives off, before terminating in the angular gyrus, a series of small twigs which pierce the supero-internal wall of the Sylvian fissure and supply the isthmus of white matter above referred to; some ramifying in the deep portion of the Insula and in the external capsule, others penetrating into the very substance of the lenticular nucleus even as far as the internal capsule.

Variations both in the extent and distribution of these lesions are naturally observed and they depend upon individual variations in the disposition of the blood vessels. These individual peculiarities in the mode of distribution of the cerebral arteries constitute a factor of considerable importance, when it comes to the question of correctly interpreting clinical facts or of giving them an anatomic basis.

It is unquestionable that mental deterioration, although present, is oftentimes much less marked in motor than in sensory aphasia—a fact easily understood, if one bear in mind the type of lesion described under “B,” in which the process involves mainly the deep substance in the vicinity of the temporo-parietal isthmus and but very slightly the convolutions of Wernicke’s region; this being especially the case whenever this area is in part supplied by the other branch of bifurcation. Occasionally, the lesion is limited to the area of distribution of the smaller twigs and Wernicke’s area escapes entirely. This notion of deep-seated lesions as a cause of aphasia, enables us to understand the endless variety of clinical forms determined by the combination of more or less marked sensory aphasia with anarthria of

greater or lesser degree; the predominance of the one or the other will vary according as the lesion is more or less confined to either the lenticular region or to Wernicke's area. It is this association which has led certain authors to describe mixed forms of aphasia. Broca's aphasia, in fact, is nothing else but a mixed aphasia in which anarthria constitutes the predominating element.

Again, it is a knowledge of the variations encountered in the mode of distribution of the branches of the Sylvian artery which affords us an explanation of the fact, that in certain cases of motor aphasia, there is implication of the left third frontal convolution; which circumstance, however, has but little influence upon the clinical picture. As a matter of fact, the point of origin of the branch which supplies the third frontal convolution is by no means constant. It may arise from the main trunk of the Sylvian artery at some little distance from its point of bifurcation; or branch off at the very seat of bifurcation of the Sylvian, in which case a true trifurcation exists; finally, it may arise beyond the point of bifurcation, taking its origin, therefore, from one or the other of the primary branches. This last mode of origin shows that the third frontal convolution of the left hemisphere may be involved in the process of softening which determines aphasia, even when it is the deep or subcortical form of lesion which presents.

Thus, does one understand the reason why was committed and perpetuated the error of ascribing to the third left frontal convolution, a special rôle in the determination of motor aphasia. It had its birth in the enthusiasm which followed the first researches on cortical localization and which resulted in attributing almost exclusively to the cerebral cortex, the entire physiology of the brain.

Knowledge of the arterial distribution clearly shows that the third left frontal convolution may alone be the seat of softening, since the branch which supplies it may arise considerably in advance of the Sylvian bifurcation; but in such a case, there being no involvement of the central regions of the hemisphere, motor aphasia does not develop (first case cited by the author illustrating this fact).

Cerebral hemorrhage may determine Broca's aphasia without involving the third frontal convolution, but only on condition of extending a greater or lesser distance behind the region of the central ganglia, towards the temporo-parietal isthmus and the

surrounding white substance. Whenever the hemorrhage is strictly confined to the domain of the basal ganglia, it is *Anarthria* which one observes and *not Aphasia*.

Marie then devotes a separate article to the discussion of the subcortical types, or pure forms, of aphasia, and takes up first the consideration of so-called pure word-deafness, a term applied to a clinical condition characterized as follows: the patient is totally unable to understand what is said to him and can neither repeat words nor write them down from dictation; voluntary speech is perfect, as are also reading, either aloud or mentally, and writing, whether the patient expresses his own ideas or copies from a text; the intellectual power is intact. According to Déjerine, the lesion which determines this clinical variety of aphasia is either a bilateral lesion of the temporal lobes, or the isolated lesion of the verbal auditory centre, situated, it is supposed, at the base of the left first temporal convolution.

Marie positively refuses to admit the existence, *per se*, of pure word-deafness, and in doing so he simply adheres to the facts which clinical observation and anatomic study have revealed to him. Never yet has he observed clinically a case of pure word-deafness, or even one closely resembling it in any way. He recalls the circumstances in the case published by Déjerine and Serieux (1895), in which, the authors having failed to discover any focal lesion, attributed the symptomatic picture to certain cellular alterations existing in the cortex of both temporal lobes. Thus, says Marie, this aphasia which in its very definition is subcortical, becomes dependent upon an essentially cortical lesion. He is convinced that pure word-deafness is a myth, and believes that failure to appreciate certain mild disorders in the mechanism of auricular transmission (such as occur in Freud's labyrinthine deafness, etc.), is responsible for the error; these auditory disturbances being, moreover, often accompanied by disorders of equilibrium and malaise, may closely simulate an apoplectic attack.

When it comes to the question of the existence of that form of aphasia called "word-blindness," Marie admits that clinically, cases are encountered in which alexia, if it be not always and absolutely the sole manifestation, constitutes at least the distinctly predominant element; but he maintains that such facts should receive a different interpretation than that given to them by the classic writers.

What is the underlying factor concerned in the pathogenesis of alexia or pure word-blindness? According to Déjerine, the lesion is one which destroys the association fibers connecting the common centre of vision—a bilateral centre, with the left angular gyrus in which are stored the visual memories of written or printed language.

Starting out with the principle that the existence of a function necessarily implies the equal existence of a governing organ or centre, Marie maintains that if mere logic tells us that a centre must exist for articulate speech—a faculty which man has at all times possessed and which constitutes his distinguishing trait, the same does not hold true in regard to reading and writing, both of which accomplishments are of eminently recent date in the history of our mental acquisitions as is well shown by our family records. Certainly, there could hardly have been for a non-existing function a corresponding regulating centre, and it is his firm belief that there is no such centre as that actually called the receptive centre for visual memories of written or printed language. It exists no more than that which classic dogma has entrusted with the auditory memories of spoken language.

But, if these theories which ascribe to the angular gyrus a definite rôle in the complex physiology of speech are untenable, the fact still remains that clinically, alexia of an almost pure type (exception being made of the co-existence in the great majority of cases of the aphasic syndrome, although often enough of a mild degree) does present, and there remains therefore, the important question of correctly interpreting anatomic facts, of acquiring an exact notion of the pathogenesis of this clinical manifestation.

The first important point to be considered in this connection is, that the lesion concerned in the production of alexia or pure word-blindness does not occupy the territory supplied by the Sylvian artery; the seat of lesion is compassed by the area of distribution of the posterior cerebral artery. Thus, the softening (such being the lesion commonly observed) does not involve primarily the domain of the centres for language, but is situated at some point in the course of the optic radiation; whence it follows, that lateral homonymous hemianopsia a dextra is a co-existing symptom in very many, if not in all, cases of so-called pure word-blindness or alexia.

The interruption of the fibers coming from the visual area is

not sufficient, however, to produce alexia, as shown by the fact that lesions strictly limited to the cuneus do not determine this symptom, though they do give rise to right-sided homonymous hemianopsia. In order to produce alexia, the seat of lesion must be such, that both the visual fibers and the deep substance of the language area are simultaneously involved. It is the lesion of the lingual and fusiform lobules occupying the inferior border of the cerebral hemisphere which realizes the above-named conditions, as it divides more or less completely that portion of the inferior longitudinal bundle and optic radiation situated above it and passing beneath the ventricular floor, and moreover invades, to a greater or lesser extent, the adjacent white matter bordering upon Wernicke's area. It is essentially this association of lesions which determines alexia. If the patch of softening situated in the lingual and fusiform convolutions penetrates but a short distance into the deep substance of Wernicke's region, or involves only slightly the fibers derived from it, then alexia only, or pure word-blindness, results; if on the contrary, the lesion extends along the outer wall of the lateral ventricle and involves the vertical segment (as seen on a frontal section) of the inferior longitudinal bundle, which constitutes the deep boundary of Wernicke's area, there follows, in addition to alexia, a variable degree of aphasia, consisting especially in paraphasia and in more or less impairment of the faculty to understand spoken language.

Again in this connection, must one give due consideration to the question of arterial distribution. Individual variations occur in the relative extent of territory supplied by each of two adjoining blood vessels; the area of distribution of the posterior cerebral artery may encroach upon that of the Sylvian, or the intermediate zone may be the seat of more or less extensive anastomosis. Duret has shown that the domain of the posterior cerebral artery is one of the most abundantly supplied by collateral anastomosis.

In the study of aphasia in general, this question of variation in the mode of arterial distribution is one of prime importance, and in qualifying even clinically a given case of aphasia, one could say with perfect reason that the aphasia under consideration is rather associated with disease of this or that blood vessel, than one resulting from lesion of this or that convolution or group of convolutions.

Thus is to be explained the widely varying clinical aspect of alexia, which, in its purest form, might be regarded as a sort of visual agnosia specialized for language. Pure alexia (or word-blindness) therefore, is hardly a true aphasia—it is an extrinsic aphasia.

Another conclusion to be drawn from what has been said concerning the seat of lesion in cases of alexia is, that a lesion of the angular gyrus is not indispensable to the production of this clinical manifestation, and furthermore, that nothing justifies the commonly accepted belief that the angular gyrus is the receptive centre for visual memories of written languages.

In closing this chapter, Marie again insists that the all-important point in the pathogenesis of alexia, is its dependency upon lesions situated in the domain of the posterior cerebral artery.

Of the so-called pure aphasiae, there remains to consider, the motor variety dependent upon a subcortical lesion, which leaves Broca's convolution intact but interrupts the fibers derived from it, and by means of which this convolution brings into action the bulbar nuclei concerned in the mechanism of speech. This form of aphasia, created by Lichtheim and further studied more particularly by Déjerine, is commonly called subcortical or pure motor aphasia. As was previously mentioned, in connection with the definition of the various terms relating to the question of aphasia, this variety of motor aphasia is, according to Marie, nothing else than anarthria; the distinctive features of its clinical picture were then described. Marie repeats that anarthria does not equal aphasia. What constitutes, from the standpoint of sound nosologic classification, aphasia proper—is not the mere fact of speaking defectively or not at all—what constitutes aphasia, is the following group of symptoms: imperfect comprehension of spoken language, intellectual impairment of a particular type (previously discussed), loss of the power to read and write.

Déjerine has strongly objected to the assimilation of pure motor aphasia and anarthria. He considers that in anarthria, Broca's convolution being intact, the speech disorder is dependent upon paralysis of the musculature of the organs of phonation (tongue, lips, soft palate, larynx, etc.); whereas in aphasia, no such paralysis exists. Marie maintains that in his cases of anarthria, there is no more paralysis of the organs of phonation than in Broca's aphasia; moreover, as already said, Broca's aphasia is, in his opinion, simply the result of the combination of anar-

thria with aphasia—either may develop first, or both may appear simultaneously. In this connection, Marie puts a question of considerable weight. Can a motor function be hindered in no other way than as the result of muscular paralysis? Is an ataxic patient a paralytic? or, again, the individual affected with double athetosis?

Motor function is the result of coordinate movements. If the higher centres are unable to assure this coordination, the function necessarily ceases; there being no necessity of incriminating direct paralysis of the muscles upon which this function depends.

Anarthria and dysarthria do not always present the same clinical aspect, nor is their mode of origin always the same. In certain cases, it is the so-called pseudo-bulbar manifestations and the paralytic symptoms which predominate, but it was not to this type that Marie referred in speaking of the anarthria observed in his aphasic patients. He insists that he took particular care to specify that these cases presented the complete symptomatic picture described by certain authors as "subcortical motor aphasia;" which amounts to saying that such patients are unable to speak, although they have retained the notion of words, are still in full possession of their intellectual faculties, including the power to read and write; and which further implies that there exists no trace of pseudo-bulbar or paralytic manifestations.

Considering the actual anatomic conception of the intracerebral motor apparatus which regulates the mechanism of speech, Marie remarks that he cannot understand why the basal ganglia should have been so completely ignored. He believes this to be a gross error, and states that the lenticulo-striate nucleus certainly exercises considerable influence upon the mechanism of phonation, acting very probably as a coordinating centre. He even goes as far as to say that in the physiology of speech, the lenticulo-striate nucleus, either in itself or through its afferent and efferent tracts of fibers, represents a centre of motor energy of much greater importance than the cortical centre alone brought into play by Déjerine.

This lenticulo-striate ganglionic system and its appendages may be affected in very different ways by the various anatomic lesions in which they are involved. Certain lesions determine anarthria such as conceived by Marie, others give rise to the symptom-complex of pseudo-bulbar paralysis; this latter syndrome is more particularly associated with the type of lesion which Marie has

described under the name of "lacunes de désintégration cérébrale" (cerebral lacunae). Marie repeats that it is upon the involvement of the lenticular zone that the constituent anarthria of motor (or Broca's) aphasia depends for its production. In this connection, he insists that he has at no time referred exclusively to the lenticular nucleus when speaking of the territory which he calls the lenticular zone—an impression one might easily derive from certain passages in Déjerine's recent articles; he wishes it clearly understood, that by the term "lenticular zone," he means to designate the area comprising the white substance situated between the convolutions of the Insula of Reil and the lenticular nucleus, as well as the external laminae of this nucleus.

Not the least interesting feature of Marie's crusade against the classic doctrine of aphasia, nor the least effective of his efforts in pointing out the unsoundness of its principles, is his timely and well-advised investigation of the original facts, of the fundamental data which served as the basis of Broca's doctrine. With a keen sense of fairness, Marie appeals to the facts brought out by the study of the lesions found in both of Broca's cases of motor aphasia; both brains being in an excellent state of preservation and actually forming part of the collection of neuropathologic specimens at the Musée Dupuytren. How disappointing it is, to learn that in Broca's first case (Cas Leborgne—the lesions of the left hemisphere being reproduced by a drawing made from a photograph of the actual specimen), the process of softening besides destroying the posterior half of the third frontal convolution, involves the lower half of the Rolandic area and the greater part of the first temporal and supramarginal gyri. The brain moreover is wholly intact as regards original configuration, no section having been made into the depth of the organ; so that the exact condition of the deeper regions remains a matter of pure conjecture.

Marie finds way to excuse Broca for having incorrectly interpreted the findings in his case, influenced, as he inevitably was, both by the data he obtained concerning the previous history of the case and which, judging from actual records, appear to have been grossly inaccurate, and by the inexact notions then prevalent (1861) regarding the pathogenesis of nervous disorders. Broca had the patient under observation for only six days. He gives the following account of the circumstances under which he was able to base his now famous discovery upon the lesions

observed in the case Leborgne. "Knowing that at the onset of the disease and for a long period of ten years, the patient had lost exclusively the power of articulate speech, having fully preserved all his other faculties, intellectual, sensory or motor, I was led to believe that the loss of motor speech had been the consequence of a lesion fairly circumscribed primarily, and that the central organ of articulate speech was probably that in which this lesion had originated; in order to find this centre among all those which were involved at the time of death, I sought to detect the point presenting the changes oldest in date, and found that, according to all probabilities, the third frontal convolution, perhaps the second also, must have been the starting point of the softening."

Thus was fashioned the fundamental principle which was to serve as the basis of our doctrine of aphasia.

As Marie remarks, the lesions observed in Broca's first case are entirely confirmative of the views he has expressed in regard to the pathogenesis of motor aphasia. The causative lesion of the aphasia is plainly evident, there being involvement of Wernicke's area; the loss of articulate speech, the associated anarthria, is to be explained by the unquestionable participation of the lenticular zone—a fact one may safely take for granted even though the hemisphere has not been cut into.

In Broca's second case (Cas Lelong), there existed clinically some disturbances of speech, but careful inspection of the left hemisphere fails to reveal the existence of any focal lesion of the third frontal convolution; the only noticeable abnormality to be seen, is the fairly marked slenderness of the inferior arm of the base of the second frontal convolution. Still, Broca considered that he had to do with a lesion which he described as follows: "The brain being placed on a table, one sees at the first glance, a superficial lesion occupying the left hemisphere and situated immediately beneath the anterior extremity of the Sylvian fissure. At this point the surface-level sinks in perceptibly, and one sees through the transparent pia, a collection of serous fluid occupying an area having about the dimensions of a franc piece, etc."

He thought that this cavity resulted from a loss of substance and represented an old apoplectic cyst. This interpretation Marie flatly refuses to admit, pointing out the fact that the above-described changes characterize, as we have learned since Broca's

time, the condition known as "Senile Atrophy of the Brain." Broca's patient had reached his eighty-fourth year at the time of his death and had been, already for eight years, an inmate of Bicêtre where his case was considered as one of senile cachexia and dementia.

From the foregoing exposition of the actual data upon which Broca based his doctrine of aphasia, it becomes plainly evident that his conception, which still prevails, regarding the localization of the motor speech centre in the basal portion of the left inferior frontal convolution, is very inexact, not to say erroneous; resting as it does, on an uncertain basis, on inaccurately observed and falsely interpreted facts. In the first case related, the bulk of the lesion occupies Wernicke's area and the domain of the Insula; the implication of the third frontal convolution is, in this case as in so many others, merely a superadded lesion, or rather an extension from the central focus, directly dependent upon the fact that in such cases, obliteration of the Sylvian artery takes place at some point in advance of that from which arises the branch which supplies the third frontal.

In the second case, there exists no focal lesion on the external surface of the left hemisphere, but simply areas of cortical atrophy which are especially distinct over the posterior portion of the second and third frontal convolutions. Moreover, it does not seem that the patient presented clinically any true aphasia, but having developed, as he did, a considerable degree of dementia, his speech was necessarily affected to a greater or lesser extent.

It thus becomes clearly evident, that neither the one nor the other of Broca's cases is suited to demonstrate the localization of the motor speech centre. No case absolutely free from doubt has yet been reported, in which a lesion strictly confined to the base of the left inferior frontal convolution had determined motor or Broca's aphasia. The reason why this error has continued to prevail since 1861, resides in the fact (already considered), that in a good number of cases of motor aphasia, the third frontal convolution is involved in the process of softening which destroys the peri-Sylvian convolutions. But, as was said before, the lesion in the third frontal is simply superadded and has in itself little, if any, significance.

That this additional lesion should occur with considerable frequency is not to be wondered at, being readily explained by the

unquestionably frequent recurrence of the arteriole which supplies the third frontal convolution; the chances being, that it will be obliterated every time that the vascular alterations involve the main trunk of the Sylvian artery or its branches of bifurcation.

It would seem rather peculiar that a convolution which has such an inconstant and uncertain source of blood supply should preside over so important a faculty as that of articulate speech.

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Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR AUGUST, 1907.

Deaths.

	1902	1903	1904	1905	1906	1907
Consumption	12	16	18	15	23	19
Typhoid fever.....	3	3	2	3	2	2
Scarlet fever.....	0	0	0	0	0	0
Measles	0	0	0	0	0	0
Whooping-cough	1	0	1	1	2	3
Diphtheria and croup....	2	1	1	2	1	9
Grippe	0	0	0	0	0	0
Pneumonia	0	0	0	4	2	0
Broncho-pneumonia	2	2	0	1	2	3
Bright's disease.....	8	12	15	10	15	15
Apoplexy	9	3	9	6	4	9
Cancer	10	8	7	13	10	6
Accidents and violence....	6	7	7	20	9	5
Deaths over seventy years.	16	18	30	24	32	19
Deaths under one year....	17	36	25	24	27	38
<hr/>						
Total death.....	126	131	161	153	170	171
Death rate.....	14.83	15.42	18.94	18.00	20.00	20.12
Death rate less non-residents	14.01	14.36	17.53	16.47	18.36	16.71

Deaths in Institutions.

	1902		1903		1904		1905		1906		1907	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital.....	11	7	5	4	7	6	12	9	10	15	6	9
Albany County Jail.....	0	0	0	0	0	0	0	0	1	0	0	0
Albany Orphan Asylum..	0	0	1	1	0	0	1	0	0	0	0	0
County House.....	2	0	1	0	10	2	4	0	6	1	2	1
Homeopathic Hospital...	2	0	2	2	1	0	2	1	2	1	0	1
Hospital for Incurables..	0	0	0	0	0	0	0	0	1	0	0	0
House of Shelter.....	0	0	0	0	0	0	0	0	0	0	1	0
Little Sisters of the Poor.	0	0	2	0	0	0	1	0	2	0	4	0
Public Places.....	1	0	0	0	1	0	0	1	1	2	1	3
St. Francis De Sayles Orphan Asylum.....	0	0	2	0	0	1	0	0	0	0	0	0
St. Margaret's Home....	0	0	2	1	0	0	4	2	0	0	6	7
St. Peter's Hospital.....	6	0	3	1	7	3	6	0	4	0	0	7
Home for Aged Men....	0	0	1	0	3	0	0	0	0	0	0	0

Births at term.....	168
Still births.....	9
Premature births.....	2
Marriages	61

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were one hundred and fifty-nine inspections made, of which seventy-eight were old buildings and eighty-one new buildings. There were forty-three iron drains laid, twenty-two connections to street sewers, twenty-seven tile drains, two urinals, forty-three cesspools, fifty-one wash basins, fifty-nine sinks, fifty bath tubs, forty-one wash trays, three trap hoppers in yard, seventy-eight tank closets, two shower baths. There were one hundred and twelve permits issued, of which eighty-nine were for plumbing and twenty-three for building purposes. There were thirty-five plans submitted, of which twelve were of old buildings and twenty-three of new buildings. Two houses were tested on complaint with peppermint, and there were fourteen water tests made. Thirty houses were examined on complaint and seventy-six were re-examined. Seventeen complaints were found to be valid and thirteen without cause.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1902	1903	1904	1905	1906	1907
Typhoid fever.....	9	11	21	12	23	1
Scarlet fever.....	5	3	1	3	7	3
Diphtheria and croup.....	20	10	9	5	12	45
Chickenpox	2	1	0	0	0	1
Measles	1	4	0	2	0	3
Whooping-cough	0	0	1	0	0	0
Consumption	0	3	2	4	0	17
Totals	37	32	34	26	42	70

Contagious Diseases in Relation to Public Schools.

None reported.

Number of days quarantine for diphtheria:

Longest..... 59 Shortest..... 8 Average..... 17 10-27

Number of days quarantine for scarlet fever:

Longest..... 22 Shortest..... 14 Average..... 18

Fumigations:

Houses..... 41 Rooms..... 93

Cases of diphtheria reported.....	45
Cases of diphtheria in which antitoxin was used.....	41
Cases in which antitoxin was not used.....	4
Deaths after use of antitoxin.....	9

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906	1907
Initial positive.....	16	2	4	4	9	35
Initial negative.....	10	8	15	6	19	20
Release positive.....	9	....	....	1	5	44
Release negative.....	8	....	1	6	23	165
Failed	8	1	....	....	4	5
Totals	51	11	20	17	60	269

Examination for tuberculosis:

Initial positive.....	2
Initial negative.....	4

MISCELLANEOUS.

Inspections of mercantile establishments.....	0
Mercantile certificates issued to children.....	6
Factory certificates issued to children.....	19
Children's birth records on file.....	25
Number of written complaints of nuisances.....	65
Privy vaults.....	11
Plumbing	11
Other miscellaneous complaints.....	43
Total number of dead animals removed.....	918
Cases assigned to health physicians.....	32
Calls made.....	150

BUREAU OF MARKETS AND MILK.

Milk dealers found to be out of business.....	0
Wagons and milk in clean condition.....	33
Wagons and milk in unclean condition.....	0
Ice on cans.....	31
Butter fats below 3%.....	3
Butter fats from 3 to 3.5%.....	11
Butter fats from 3.5 to 4%.....	16
Butter fats over 4%.....	3
Solids below 12%.....	4
Solids from 12 to 12.5%.....	10
Solids from 12.5 to 13%.....	10
Solids over 13%.....	9
Meat condemned.....	0

BUREAU OF MILK.

No.	Specific Gravity	BUTTER FATS.				SOLIDS.			
		Under 3%	3 to 3.5%	3.5 to 4%	Over 4%	Under 12%	12.5 to 13%	Over 13%	12 to 12.5%
3.....	32.1	..	I	..	..	..	..	..	I
20.....	31.3	..	I	..	..	..	..	..	I
23.....	32.3	..	..	I	..	..	..	I	..
27.....	32.1	..	..	I	..	..	I	..	..
31.....	32.4	..	..	I	..	..	I	..	..
40.....	32.3	..	..	I	..	..	I	..	..
51.....	32.4	..	I	..	..	..	..	..	I
55.....	33.1	..	..	I	..	..	..	I	..
74.....	32.3	I	..	..	..	I	..	..	..
75.....	33.	..	I	..	..	..	..	..	I
78.....	31.	I	..	..	..	I	..	..	..
83.....	31.3	..	..	I	..	..	I	..	..
95.....	32.1	..	..	I	..	..	I	..	..
102.....	34.	I	..	..	..	I	..	..	..
108.....	31.3	..	..	I	..	..	I	..	..
112.....	32.1	..	..	I	..	..	I	..	..
119.....	32.	..	I	..	..	..	..	..	I
139.....	32.3	..	..	I	..	..	I	..	..
144.....	33.4	..	..	..	I	..	..	I	..
146.....	33.1	..	..	I	..	..	..	I	..
157.....	33.4	..	..	I	..	..	..	I	..
160.....	33.	..	I	..	..	..	..	..	I
161.....	33.4	..	..	..	I	..	..	I	..
163.....	32.	..	I	..	..	..	..	..	I
164.....	33.	..	I	..	..	..	..	..	I
171.....	33.1	..	I	..	..	..	..	..	I
176.....	31.3	..	I	..	..	I	..	..	..
177.....	32.4	..	I	..	..	..	..	..	I
179.....	33.4	..	..	I	..	..	..	I	..
180.....	34.4	..	..	..	I	..	..	I	..
181.....	33.1	..	..	I	..	..	I	..	..
184.....	32.4	..	..	I	..	..	I	..	..
302.....	32.4	..	..	I	..	..	..	I	..

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

A special meeting of the Medical Society of the County of Albany was held in the Albany Medical College on Wednesday, September 4, 1907, at 5:30 o'clock, to take action on the death of Lansing B. Winne, M. D., of Albany. President Lempe in the chair. The following members were present: Drs. Bailey, T. P., Blair, Classen, Cook, Jenkins, Lempe, Mereness, Moore, C. H., Murray, Morrow, O'Leary, Papen, G. W., Sr., Papen, G. W., Jr., Perry, Stillman, Trego, Tucker, Vander Veer, Bedell.

A committee, consisting of Drs. Mereness, Classen, Perry, Ball and Blair, were appointed to draw up resolutions and presented the following:

WHEREAS, Dr. Lansing B. Winne has departed this life and there has been removed from among us a physician ripe in practice and experience, depriving the community of his valuable services; and

WHEREAS, The Medical Society of the County of Albany has lost a valued and respected member;

Resolved, That this Society, deeply sensitive of its loss, desires to express its deep-felt sympathy to the family of the deceased; also

Resolved, That a copy of these resolutions be transmitted to the family and be spread upon the records of this Society.

H. E. MERENESS.

F. L. CLASSEN.

T. K. PERRY.

O. D. BALL.

L. E. BLAIR.

Dr. COOK moved the adoption of the resolutions.

Seconded and carried.

Dr. STILLMAN said: "I was well acquainted with Dr. Winne during his student days and always found him an exceedingly pleasant and genial companion as well as a good student. Dr. Winne was a man of very sensitive temperament; thoroughly devoted to his profession and deeply interested in all his cases. I am sure that he had the love and respect of not only all his patients but of all his associates in the profession. I most deeply regret his untimely decease. We have lost a thoroughly upright and honorable member of the profession, whom all knew to respect."

Dr. O'LEARY said: "I knew Dr. Winne twenty to twenty-five years. He was a man of high ideals, upright and honest. During my term as Health Officer when he was associated with me I always found him fearless and honorable. His sudden death was a shock and brought great grief to all his friends."

Dr. PERRY. *Mr. President and Members of the Society*: My acquaintance with Dr. Winne was of long standing; I had known him from boyhood. In late years, after he had entered in his college course, he became a member of a "quiz" class of which I was one of the instructors. We continued this class through the late spring and summer months for two

seasons, at which time our various members graduated from their respective colleges. The doctor took his diploma from the College of Physicians and Surgeons, at that time one of the most noted in the country.

He was a most diligent student and always the foremost in recitations. After his graduation he spent much of his time with his preceptor, Professor Henry R. Haskins, one of the foremost anatomists of his day, and under whose guidance I conducted autopsies for several years.

The doctor was almost invariably present, and our friendship still further cemented. As the years passed we had many professional and social meetings and I came to know him real well.

He was of a quiet and somewhat retiring nature, and from a professional standpoint seemed quite content to pursue the even tenor of his way, maintaining just enough business to keep himself pleasantly occupied.

His death was very sad and, I am sure, quite unexpected to us all. I feel that I voice the sentiment of all present when I say our Society has lost a genial companion and the profession a useful member.

DRS. BLAIR, CLASSEN and MORROW spoke of the thoughtfulness, loyalty, genialness, gentlemanliness and unassuming nature of Dr. Winne, and all felt the loss of one so honorable.

Meeting adjourned at 6 P. M.

ARTHUR J. BEDELL, *Secretary.*

GEORGE GUSTAVE LEMPE, *President.*

Medical News

ALBANY MEDICAL COLLEGE.—The Introductory Lecture of the Seventy-seventh Session was delivered by Professor Willis G. Tucker, M. D., in the Amphitheatre of the College, on Tuesday, September 24, 1907, at 12 m.

THE ALBANY MEDICAL COLLEGE ALUMNI ASSOCIATION OF NEW ENGLAND held their ninth annual meeting in Rhode Island Hall, Brown University, Providence, R. I., September 5, 1907. The Secretary's report showed that the Association had a total membership of 112, of whom 59 were expected to be present at the meeting.

The annual election of officers, the principal business transacted, resulted as follows: President, Dr. Creighton W. Skelton, Providence; Vice-President, Dr. J. J. Osterhoudt, Keene, N. H.; Secretary, Dr. E. C. Collins, Springfield, Mass.; Treasurer, Dr. Alfred H. Hoodley, Northampton, Mass.; Board of Governors, Dr. George B. McGraw of Rhode Island, Dr. Eliphalet Wright of Massachusetts, Dr. F. T. Clarke of Maine, Dr. George J. Holmes of New Hampshire, Dr. Leonard Fillmore of Vermont, Dr. George James of Connecticut.

The committee of arrangements on the meeting consisted of Dr. H. E. Van Allen, Dr. N. N. Broga and Dr. W. G. Murphy.

After the business of the session had been completed, the alumni went to Field's Point for a shore dinner, as the guests of Dr. Skelton.

THE ALBANY GUILD FOR THE CARE OF THE SICK—STATISTICS FOR AUGUST, 1907. Number of new cases, 128; *Classified as follows*: Dispensary patients receiving home care, 2; district cases reported by health physicians, 2; charity cases reported by other physicians, 56; moderate income patients, 68; old cases still under treatment, 60; total number of patients under nursing care during the month, 188. *Classification of diseases* (new cases): Medical, 39; surgical, 4; gynecological, 4; obstetrical, in general work of the Guild, 39 mothers and 31 infants under professional care; 4 contagious diseases in the medical list; transferred to hospitals, 8; deaths, 7.

Special Obstetrical Department—Obstetrician in charge of cases, 1; attending obstetrician, 1; students in attendance 2; Guild nurses, 6; patients, 4; visits made by attending obstetrician, 2; by the medical students, 19; by the Guild nurses, 45; total number of visits for this department, 66.

Visits of Guild Nurses (all departments): Visits with nursing treatment, 1,400; for professional supervision of convalescents, 245; total number of visits, 1,645. Seven graduate nurses and 3 assistant nurses were on duty. Cases were reported to the Guild by two of the health physicians and by 37 other physicians.

WANTED—COPIES OF VOLUME I OF "STUDIES FROM THE BENDER LABORATORY, 1904," in order to supply the requests of librarians who desire to complete their files. Any one who is willing to surrender his copy will confer a great favor by forwarding it to Dr. R. M. Pearce, Bender Hygienic Laboratory, Albany, N. Y.

THE ALBANY SANITARY BUREAU.—Announcement is made that Messrs. Willis G. Tucker, M. D., Ph. D., Professor of Chemistry and Toxicology in the Albany Medical College, Olin H. Landreth, C. E., D. Sc., Professor of Engineering in Union College, James H. Stoller, A. M., Ph. D., Professor of Biology in Union College, have associated themselves together in establishing the Albany Sanitary Bureau of Albany, N. Y., for the purpose of conducting a professional practice in making sanitary investigations, examinations, inspections and reports.

The following matters will receive special consideration by the bureau:

(1) The investigation of private and public water supplies, including such of the following as may be required:

(a) Sanitary surveys of the sources of supply and of surrounding conditions;

(b) Chemical examinations of samples of the waters;

(c) Bacteriological examinations of samples of the waters;

(d) Microscopical examinations of samples of the waters;

(e) Critical interpretations of the results of the above four examinations embodied in a report on the general and detailed characteristics of the waters under examination.

(f) Investigation and recommendations as to the best means of protection or purification of the waters.

(2) The investigation of stream pollution, including comprehensive

examinations of the waters of the streams, the sources of contamination, pollution or infection, and the most suitable and feasible means of improvement or protection.

(3) The investigation of sewerage conditions in municipalities and at important isolated institutions and premises, as well as the most appropriate and available methods of sewage disposal. Also the examination of existing sewage disposal plants with reference to the possibility of increasing their efficiency or of reducing their cost of operation.

(4) The investigation of the sanitary condition of school buildings, churches, hotels, summer resorts and boarding houses, theaters, factories and other public buildings, comprising the ventilation, heating, plumbing and sewerage, fire-protection and fire-escapes. If desired, periodic inspections will be maintained and certificates of the sanitary condition of the buildings and institutions will be furnished.

(5) The examination of dairies, creameries and milk stations and the preparation of plans and recommendations looking to their betterment and to bringing these plants and their products up to modern legal and commercial requirements and standards. Such examinations will include, where necessary, inspections and tests of dairy cattle by a skilled and experienced dairy veterinarian.

(6) The Sanitary Bureau will undertake on reasonable terms, standing engagements with local Boards of Health and other municipal bodies, or with municipal water departments or private water companies, by which regular periodic inspections or examinations will be made of any kind within the scope of the work of the Bureau, or by which arrangement the services of the Bureau may be called on whenever desired without the delay incident to correspondence. It is believed that by this arrangement boards and companies may secure more effective and prompt service and thereby the maintenance of better sanitary conditions than by less systematic sanitary supervision.

In addition to the work of the active members, the Bureau has been fortunate in securing the occasional services of Dr. Richard M. Pearce, Director of the Bender Hygienic Laboratory and Professor of Bacteriology in the Albany Medical College, as Consulting Bacteriologist of the Bureau.

A TROY SOCIETY FOR THE HOME TREATMENT OF CONSUMPTIVES.—According to the *Troy Press*, a society has been formed to inaugurate a class of instruction for consumptives who cannot afford to leave home and go to a sanitarium or to pay for continuous medical attention. Three physicians have volunteered their services. The members of the class are to meet each week for examination, and visits to the homes will be made by a nurse to see that the instructions given by the physicians are properly carried out.

This is a most commendable plan and is worthy of adoption elsewhere. In some places consumptives meet daily in the grounds of a hospital and spend the day in the open air under the care of the physicians and nurses, proper food in suitable quantities being provided for the patients.

The Troy Board of Health is actively exerting itself for the protection of the city's milk supply. Milk inspectors have been appointed and a

bulletin of instruction has been issued to all milk dealers, stating in definite language the requirements for the production and sale of satisfactory milk.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY.—Gaylord Parsons Clark, A. M., M. D., Dean of the College of Medicine of Syracuse University and Professor of Physiology, died at his home in Syracuse, September 1, 1907.

Frank P. Knowlton, A. M., M. D., at present Associate Professor of Physiology, has been advanced to the head of the department of physiology.

Harold Dickenson Senior, M. B., F. R. C. S., at present an Associate in Anatomy at the Wistar Institute of Anatomy, Philadelphia, has been elected to the chair of Anatomy and as Director of the Anatomical Laboratory at Syracuse University, to take the place formerly held by Dr. George M. Price. He will have supervision of the department of Histology and Embryology, and will secure an assistant to take the place of Professor Reese, who has accepted a position in the University of West Virginia.

Gustave M. Meyer, B. S., Sc D., for four years assistant to the chair of Physiological Chemistry at Columbia University, New York, has been elected to the chair of Physiological Chemistry in the Medical College of Syracuse University.

CIVIL SERVICE EXAMINATIONS FOR THE STATE AND COUNTY SERVICE.—The State Civil Service Commission will hold examinations October 12, 1907, for the following positions: Assistant Sanitary Engineer, State Health Department, \$1,500; Assistant Steam Engineer, Onondaga County Service, \$720 to \$900; Bookkeeper, Fourth Grade, \$540 to \$720; Gardener, State Institutions, \$480 and maintenance; Highway Inspector, \$3.50 to \$4.50 a day; Instructor in Tinsmithing, \$780 and board; Leveler, \$4.50 to \$5 a day; Library Organizer (woman), \$1,200 and \$1,500; Page, State and County Offices, \$300 to \$360; Record Clerk, Court of General Sessions, New York County, \$1,200 to \$2,000; Sanitary Inspector, State Health Department, \$3 to \$5 a day; Superintendent, Erie County Lodging House, \$1,000 to \$1,200; Telephone Operator, Kings County Service, \$720; Transit Inspector, Public Service Commission, \$1,200; Woman Officer, State Institutions, \$300 to \$360 and maintenance.

The last day for filing applications for these positions is October 5th.

Full information with application forms for any of these examinations may be obtained by addressing the Chief Examiner of the Commission at Albany. CHARLES S. FOWLER, Chief Examiner.

THE UNITED STATES CIVIL SERVICE COMMISSION announces an examination on October 23, 24, 1907, to secure eligibles from which to make certification to fill a vacancy in the position of anatomist (male), at \$1,600 per annum, in the Army Medical Museum office of the Surgeon-General and other similar vacancies as they may occur there.

The examination will consist of the subjects mentioned below, weighted as indicated:

<i>Subjects.</i>	<i>Weights.</i>
1. Human anatomy	40
2. Anatomical drawing (competitors will be required to make a pen-and-ink drawing from a photolithograph which will be furnished)	20
3. Gross pathology (of tissues)	15
4. Construction, care, and use of microscope (questions relating to the compound microscope, with knowledge of various makes in general use)	10
5. Training and experience (rated on application)	15
Total	100

Age limit, twenty years or over. Only male applicants will be admitted to the examination.

It is desired that the person appointed to this position should be young, in good health, have a thorough knowledge of anatomy (preferably, but not necessarily, a graduate in medicine), be able to make anatomical drawings, understand microscopes, surgical instruments and appliances, and be able to prepare, card, and keep in order the anatomical specimens of the museum.

This examination is open to all citizens of the United States who comply with the requirements.

This announcement contains all information which is communicated to applicants regarding the scope of the examination, the vacancy or vacancies to be filled, and the qualifications required.

Applicants should at once apply to the United States Civil Service Commission, Washington, D. C., for application Form 1312. No application will be accepted unless properly executed, including the medical certificate, and filed with the Commission at Washington. In applying for this examination the exact title as given at the head of this announcement should be used in the application.

REPORT OF EPIDEMICS SPREAD BY MILK.—In the study of the sanitary milk problem undertaken by the Bureau of Public Health and Marine-Hospital Service at the direction of the Secretary of the Treasury and the President, it is desired to make a compilation of all authentic cases in which disease has been spread by milk. This will include cases where milk has been the undoubted means of carrying an infectious disease to one or more persons. Whereas, in the light of present knowledge, the greatest interest centers in cases of typhoid fever, diphtheria, and scarlet fever spread by this means, yet the report of other diseases carried in this way is also desired.

It is believed that although many epidemics caused by milk have been reported in the printed reports of boards of health and in the medical journals, a greater number known to medical men have not been reported.

Physicians are requested to co-operate by reporting to the Bureau any

cases of disease or epidemics spread by milk. Reports, to be of service, should be returned not later than October 15, 1907, to WALTER WYMAN, *Surgeon-General*.

PERSONALS—Dr. JOHN W. JOHNSTON (A. M. C., '66) of Claysburg, Blair county, Pa., called at the College, September 12th. Dr. Johnston served in the Civil War and was a friend of the late President McKinley. He was also a student at the Albany Law School.

—Dr. THOMAS J. RYAN (A. M. C., '93) of 47 Eagle street, Albany, is in Europe on his wedding journey.

—Dr. N. A. PASHAYAN (A. M. C., '01), who has been in the State Hospital service since graduation, has recently resigned to take up private practice in Troy, N. Y.

—Dr. LA SALLE ARCHAMBAULT (A. M. C., '02), after some years' study in Europe, has started practice as a neurologist at 227 State street, Albany, N. Y.

—Dr. W. G. ROMMEL (A. M. C., '05) is in practice at Grapeville, Greene county, N. Y.

—Dr. W. E. HAYS (A. M. C., '05), after two years as resident physician in the Philadelphia Polyclinic, has opened his office at 334 West 145th street, New York City.

—Dr. JOSEPH F. HARRIS (A. M. C., '06) is assistant physician at the Long Island Home, Amityville, L. I.

—Dr. THOMAS J. FLYNN (A. M. C., '05), after a year as resident physician in the Albany Hospital, has started practice at 232 West 104th street, New York City.

—Dr. ARTHUR T. LAIRD is at the Adirondack Cottage Sanitarium, Trudeau, N. Y.

—Dr. E. MACD. STANTON, formerly at the Bender Laboratory, has started practice at 613 State street, Schenectady, N. Y.

—Dr. GERALD GRIFFEN (A. M. C., '01), of Albany, sailed for Europe September 12th.

—Dr. DONALD BOYD (A. M. C., '03) has moved from Brooklyn to Valatie, N. Y.

—Dr. JOHN H. GUTMAN (A. M. C., '02), after a year in Albany Hospital and several years with Dr. MACDONALD, is located at Lancaster and Dove streets, Albany.

MARRIED—Dr. NISHAN A. PASHAYAN and Miss Charlotte Sellick Hume were married at Warsaw, N. Y., August 31, 1907.

DIED—Dr. EBEN N. WOOD (A. M. C., '75) died at Syracuse, N. Y., August 12, 1907, aged fifty-four years.

In Memoriam

LOUIS A. HARRIS, M. D.

Dr. Louis A. Harris died at his home in Newburgh, N. Y., August 17, 1907, after a long illness. The principal ailment was cirrhosis of the liver.

Dr Harris was born in Annandale, Dutchess county, March 12, 1869. He was the son of Aaron Harris, a contractor and builder, who still survives. His mother was Rachel J. Lewis before her marriage. He was graduated in 1880 from St. Stephen's College, Annandale, with the degree of Bachelor of Arts. The following year he spent in teaching school, after which he began the study of medicine. In 1881 he entered the Albany Medical College, from which he was graduated with the class of 1884. He at once located for practice in Valley Falls, Rensselaer county, where he remained but six months. He spent three months in Rosendale and from there went to Fly Mountain, Ulster county, where he remained for two years.

In the fall of 1887 Dr. Harris went to Newburgh, and in February of the following year opened a drug store, which he carried on in connection with his practice. After continuing this for five years he gave his undivided time to his profession. In 1892 he was appointed physician to the City and Town Home and the Children's Home, in which position he remained until last spring. He was for several years health officer of the town of Newburgh. While his health remained good he attended to a large practice, covering an extensive territory in the city and in outlying districts. On January 22, 1895, Dr. Harris and Sarah Elizabeth Coles were married in East Orange, N. J.

Dr. Harris was a man of great activity and genial temperament. He was a member of Christian Lodge, I. O. O. F., of which he was a Past Grand; New York Encampment, No. 1, of Albany; the Sexennial League, and the Order of American Firemen. He was also identified with the Foresters, the Knights of Pythias and the Newburgh Lodge of Elks. For five years he served in the Tenth Separate Company, National Guard, and when he resigned he was assistant surgeon with the rank of first lieutenant. He had also served as examining physician of Newburgh Lodge of Foresters, Hudson River Lodge, No. 276, Sons of St. George, and as medical examiner at Newburgh for the Odd Fellows Mutual Aid and Accident Association of Piqua, Ohio.

Dr. Harris is survived by his wife and an adopted daughter, Marion Hempstead, who is a niece of Mrs. Harris; his parents and his sister, Edith, the wife of the Rev. A. S. Lewis, rector of the Episcopal Church in Johnstown, N. Y.

Current Medical Literature

REVIEWS AND NOTICES OF BOOKS

Diagnostics of Diseases of Children. By LEGRAND KERR, M. D., Professor of Diseases of Children at the Brooklyn Postgraduate Medical School. Octavo of 542 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$5.00, net; Half Morocco, \$6.50, net.

The appearance of a number of new books this year on Diseases of Children is an index of the interest taken in this subject by the medical profession. Taken in a broad sense, pediatrics is the specialty of the general practitioner. It is confessedly a difficult matter to diagnose disease in children. To quote James Finlayson: "A student confronted with a sick child may be moderately well acquainted with diagnosis as practiced in our general hospitals, but may feel as if all his knowledge and all his methods had suddenly failed him; he may experience the same sense of helplessness which a traveler will have when suddenly cast adrift in a strange land, of whose customs he is ignorant and whose language he has not yet learned; in proportion as he is intelligent and practiced in traveling at home, will he experience the vexation of seeing the same kind of things—the means of locomotion, the places of rest, the various forms of food—and yet be unable to understand how to avail himself of them all; or, perhaps, misguided by some spurious resemblance, or misled by some opposite custom he may find himself injured by the very knowledge which would otherwise be useful."

The work before us professes to deal solely with the question of diagnosis, and the author has endeavored "to approach the child as the child is approached in the sick room, with the idea of arriving at right conclusions." The book is large—too large in fact—made so in great measure by the heavy grade of paper and the spacing of the type, as there are on an average less than four hundred words to the page.

This book is intended to consider objective symptoms with their diagnostic significance. It seems rather unnecessary, therefore, to describe a number of diseases in the ordinary text-book manner. When a child is approached in the sick room the physician first observes and detects certain symptoms and from them he deduces his diagnosis. The text-book method is to give a minute description of each disease.

In a book of this character it is unfortunate that the technique and diagnostic import of lumbar puncture in meningitis is not considered, the only reference made is that "it is of doubtful value, being somewhat uncertain." This certainly is not the present opinion of the medical profession. Then, the very great importance of the character of the infant's stools in diagnosing diseases and affections of the alimentary tract should be described in detail. The very few and short descriptions of the stools are very disappointing.

Hydrocephalus receives scanty consideration. In the index, one is referred to page 44, on which, under Delayed Closure of the Fontanelle, four and one-half lines are devoted to Hydrocephalus.

There is also an index reference to page 403, but that page deals entirely with tuberculous meningitis with no mention at all of hydrocephalus, nor is there any anywhere else in the book.

Cretinism occupies less than half a page, and no mention or differentiation between it and infantilism and mongolism is made.

The index is very complete and contains sixteen pages.

The author has adopted simplified spelling and no diphthongs are used. He is a little inconsistent in the use of the terms "tubercular" and "tuberculous."

A number of excellent illustrations add to the value of the book, but the presence of cuts illustrating Lentigo on page 238, of Pemphigus on page 241, of Lupus vulgaris on page 242, all of which have no text or index reference, leads one to the suspicion that they, with several others, were simply inserted as padding.

This book contains many commendable features, and the criticisms above are noted in the hope that they will receive attention in the future editions which this work deserves.

H. L. K. S.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and other Topics of Interest to Students and Practitioners. By Leading Members of the Medical Profession throughout the World. Edited by W. T. LONGCOPE, M. D., Philadelphia, U. S. A., with the collaboration of WM. OSLER, M. D., Oxford, JOHN H. MUSSER, M. D., Philadelphia, A. MCPHEDRAN, M. D., Toronto, FRANK BILLINGS, M. D., Chicago, CHAS. H. MAYO, M. D., Rochester, THOS. H. ROTCH, M. D., Boston, JOHN G. CLARK, M. D., Philadelphia, JAMES J. WALSH, M. D., New York, J. W. BALLANTINE, M. D., Edinburgh, JOHN HAROLD, M. D., London, RICHARD KRETZ, M. D., Vienna; with regular correspondents in Montreal, London, Paris, Berlin, Vienna, Leipsic, Brussels and Carlsbad. Volume I, Seventeenth Series, 1907. Philadelphia and London: J. B. Lippincott Company.

We note with the beginning of this series a change of editorship, the place of Dr. A. O. J. Kelly being filled by that of W. T. Longcope, M. D., of Philadelphia; also as additions to the staff the names of Chas. H. Mayo and Frank Billings. We wish the new men every success.

The leading article on "The Psychic Treatment of Some of the Functional Neuroses," by L. F. Barker, M. D., is worthy of consideration by all interested in this difficult field of mind therapy. The writer classifies the functional neuroses into (1) hysteria, (2) neurasthenia, (3) traumatic neurosis, (4) hypochondria, and (5) psychasthenia. Among the psychotherapeutic measures he mentions explanation, avowal, persuasion, medical obedience, psychic stimulation and education (of the emotions, the attention and the will), and finally suggestion. He then proceeds to explain his method of using the same.

"Progress of Medicine During the Year 1906." Chronic bacillus carriers after typhoid fever are the patients from whom the organism can be isolated ten weeks after the onset of the attack or of a relapse; about four per cent. of typhoid fever cases become such carriers. Anti-typhoid serum appears to be growing in favor in France. The general opinion of the profession appears to be against the use of purgatives and intestinal antiseptics.

As effective prophylaxis in pneumonia, Dr. J. N. Anders advocates (a) thorough disinfection of pneumonic sputum, (b) isolation and later disinfection, (c) removal of personal predisposition, (d) introduction of certain public measures. He favors the fresh air treatment in certain suitable cases.

Musser believes that the public are being educated to take too rosy a view of the curability of tuberculosis, "altho halcyon days are coming, at present we dare only say 'tuberculosis is sometimes curable.'" He believes that an appropriate climate with proper food and rest affords more likelihood of permanent cure than the home or sanatorium case.

Dr. E. L. Trudeau has formed the impression that the use of tuberculin brings about somewhat better results than can be obtained by sanatorium methods alone.

Manual of Diseases of the Eye. By CHARLES H. MAY, M. D., Chief of Clinic and Instructor in Ophthalmology, College of Physicians and Surgeons, Medical Department, Columbia University, New York, 1890-1903; Ophthalmic Surgeon to the City Hospitals, Randall's Island, New York; Consulting Ophthalmologist to the French Hospital, to the Gouverneur Hospital, and to the Red Cross Hospital, New York; Adjunct Ophthalmic Surgeon to Mt. Sinai Hospital, New York, etc. Fifth Edition Revised, with 362 original illustrations, with 22 plates, with 63 colored figures. New York: William Wood and Company, 1907.

The appearance of the fifth edition of this excellent text-book is sufficient evidence of its value. No small work contains so many or so beautiful illustrations. The description of conditions are concise and yet convey a definite idea of the disease described. It is deservedly the most popular of the eye manuals.

A Manual of the Diagnosis and Treatment of the Diseases of the Eye. By EDWARD JACKSON, M. D., Professor of Ophthalmology in the University of Colorado. Second Revised Edition. 12mo of 615 pages, with 182 text illustrations and 2 colored plates. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$2.50, net.

The second edition of Dr. Jackson's manual has been so revised as to include the latest methods of diagnosis and the newer therapeutic measures. A practical bibliography of ophthalmic literature in the English language has been arranged at the end of the text. For admirable clearness, comprehensiveness and brevity this book is commended to all students and general practitioners.

A. J. B.

NEUROLOGY

Edited by Henry Hun, M. D.

A Case of Dyskinesia Intermittens Angiosclerotica Brachii. (Ein Fall von Dyskinesia intermittens angiosclerotica Brachii).

OTTO STENDER. *St. Petersburger medicinische Wochenschrift*, 9 February, 1907, No. 4.

Determann and Erb have suggested a broader conception of the effects of arteriosclerosis than has obtained, and believe that symptoms analogous with intermittent claudication may be observed in other parts than the lower extremities, as in the tongue and arms, and that paroxymal difficulty in motor capacity as well as in walking may be ascribed to vascular disease.

Stender reports the case of a laundress aged fifty, who had suffered for three years from dyspnea and palpitation on exertion and edema of the lower extremities, with pain beginning in the right shoulder and extending to the neck and back. These pains occurred only after prolonged and severe use of the right upper extremity, and consequently were frequent, interfered with the patient's occupation, and were quickly relieved by resting the limb. Paresthesia and a sensation of cold were present in the intermissions. Physical examination revealed an hypertrophied heart with an aortic diastolic murmur and pronounced arterio-sclerosis. The right radial was almost too small to be felt, and the left was prominent and gave the typical pulsus celer of aortic incompetency. Cardarelli's sign was not present. The Röntgen examination proved the absence of aneurysm. The objective differences between the right and left upper extremities were not marked. The hue and temperature of both were normal, but the endurance of the right as compared with the left by repeated elevation of a weight, was less than one half. The conclusion is inevitable that a deficiency in the amount of blood supplied in the distribution of a given artery, determines a loss of power in the organs affected.

The Prognostic Value of the Argyll-Robertson Pupil. (Zur prognostischen Bedeutung des Argyll-Robertsons'chen Phänomens.)

ALEXANDER PILCZ. *Monatsschrift für Psychiatrie und Neurologie*, Band XXI, Heft, 1, January, 1907.

It is well known that the various pupillary disturbances, especially anisocoria and sluggish response to light, or even the complete Argyll-Robertson pupil, are not necessarily pathognomonic for locomotor ataxia or general paralysis. Observations of these anomalies have been made in alcoholism, periodic psychoses, and in uncomplicated cerebraesthesia. Inequality of the pupils was observed by Pelizaeus eleven times in three hundred and twenty cases of neurasthenia. In one case this was associated with menstrual disturbances, in another with dyspepsia. In one

case the inequality persisted for more than a year. Pelizaeus also reports a case of *springing* (leaping) mydriasis for seventeen years after the inequality was noticed. Löwenfeld believes that inequality of the pupils and hippus is quite common in neurasthenia. It is well known that syphilis alone, independently of locomotor ataxia or paresis, may induce the most varied pupillary disturbances, as well as the pure Argyll-Robertson condition. In neurasthenia the pupils are often abnormally dilated and react slowly to all stimuli, or they may be midwide and react with unusual promptness to a degree approximating hippus. Myosis has been regarded as significant of organic disease.

Among the diseases in which the Argyll-Robertson pupil has been found, besides locomotor ataxia, paresis and syphilis, have been dementia, nephritis, multiple sclerosis, progressive muscular atrophy and coal gas poisoning.

Pilcz has followed the ambulatory cases of paresis or suspected paresis in his service with reference to this point, and selects seven in which the termination of the disease was exceptional, although the pupillary symptoms were suggestive. The first case was of typical neurasthenia with sluggish light reaction and prompt accommodation and pain responses. In a relapse the pupils were found normal. In another, similar pupillary symptoms disappeared in four months. In the third case there was history of lues, and the left pupil reacted more slowly than the right; recovery followed. The other cases were similar. These conditions are quite infrequent in cerebrasthenia, but would probably be more generally observed if all cases of suspected paresis were followed, in which the diagnosis were made to depend upon the pupils. The value of the Argyll-Robertson pupil should not be underestimated but lumbar puncture promises more definite results.

Cerebral Conditions Resulting from Accident (Ueber zerebrale Zustände nach Traumen).

EDWARD SCHWARZ. *St. Petersburger medicinische Wochenschrift*, 3 March, 1907, No. 9.

The introduction of the term "traumatic neurosis" has removed many cases from the category of "commotio cerebri," and this assumption of a purely functional condition may have become too frequent. The nomenclature has been altered lately by the introduction by Kocher of the term "cerebral pressure." Kocher reserves the term "commotio cerebri" for cases in which the symptoms diminish rapidly after the injury, without any lasting manifestations, because the disorder is due to a momentary disturbance of the circulation, although some confusion may arise over the manifestations in parts whose functions are unknown. Schwarz believes that the more these vague symptoms are studied the greater becomes the uncertainty of their significance. He has observed cases whose clinical picture is purely subjective, as shown by a sense of well-being or of weakness. Schwarz then analyses several cases in which he shows the determining value of lumbar puncture. One patient left the

hospital after the accident, after having presented symptoms of cerebral concussion, but lumbar puncture revealed red and white blood cells in a yellow serum, showing the admixture of blood. This was certain evidence of a hemorrhage, although the patient recovered quickly and presented no lasting symptoms. A month later the fluid was normal. Hemorrhagic cerebrospinal fluid indicates a laceration probably of the cerebral surface, either upon the convexity or the base, and the spinal puncture thus gives evidence, not of cerebral concussion, but of a gross lesion. This condition would not obtain, of course, in injuries within the brain, as in the central ganglia. Whether the cerebro-spinal fluid is affected by other lesions is not yet known.

These observations justify the belief that the victims of the so-called traumatic neurosis, which follow a severe head injury, are not always to be regarded as suffering from a simple functional disturbance, but from an actual wound of the brain, which is revealed by the assistance of the lumbar puncture. Furthermore, though the existence of shock neurosis and psychoses cannot be disputed, there is a fair assumption in a great number of the cases that the victim has also suffered from a direct wound of the brain.

OPHTHALMOLOGY

Edited by Charles M. Culver, M. D.

The Comparative Efficiency of Silver Nitrate, Protargol and Argyrol.
T. HARRISON BUTLER. *The London Ophthalmoscope*, 1 January, 1907.

Every summer an epidemic of acute muco-purulent conjunctivitis breaks out in Palestine and Egypt, caused chiefly by the Koch-Weeks' bacillus. During this epidemic many hundred cases present themselves at the British Ophthalmic Hospital in Jerusalem. The author has, in consequence, had ample material to make a comparative examination of the therapeutic effects of silver nitrate, protargol and argyrol in the treatment of this disease. For many years silver nitrate has been exclusively used at this hospital, and it has given excellent results. Long experience has shown that it cannot be safely used in a stronger solution than three per cent., and a two per cent. solution has generally been employed. A two per cent. solution of silver nitrate, even if neither neutralized, nor washed out, never causes any irritation, nor do the lids, even in infants, ever show any signs of cauterization. Any solution stronger than three per cent., unless at once neutralized with salt solution, has a caustic action, leaving a faint film of destroyed epithelium. This is especially the case with infants, who form the majority of the cases. Accordingly, in making these tests, a two per cent. of silver nitrate was always employed. In adults the silver solution was neither washed out, nor neutralized. In infants the eye was washed out with boric lotion, after the application of the nitrate. Protargol and argyrol were used in thirty-three per cent. solution (thirty-three grams in one hundred grams of water). The solution was freely used and the excess was left in the eye. The solutions were always applied by means of small pellets of absorbent wool held in catch forceps. Drops for home use

were always given—silver nitrate in two tenths per cent. strength, or argyrol or protargol in five per cent. strength.

These comparative tests which were made in the summer of 1905, were carried out as follows: Cases were chosen in which the disease was in an early stage, and the two eyes nearly equally affected. One drug was applied to the right eye, another to the left, while the third was given for home use. The next day the eyes were inspected, and the differential treatment continued day by day until either one drug established a superiority or it was certain that both were having an equal effect. Many of the patients were never seen again; probably the first application cured the case.

Forty-two cases in which silver nitrate was tested against protargol were followed up to a complete cure. The results were as follows:

Protargol superior in sixty-two per cent. of the cases.

Silver nitrate superior in ten per cent.

Equal result in twenty-four per cent.

In many of the cases in which protargol proved the better drug the difference was not great, but it was sufficient to demonstrate its superior therapeutic action.

In twenty-two completed cases, protargol was tested against argyrol with the following results:

Protargol proved superior in fifty per cent. of the cases.

Argyrol proved superior in forty-five one hundredths per cent. of the cases.

Even result in forty-nine and forty-five one hundredths per cent. of the cases.

Or shortly, in half the cases the effect of the two drugs was the same, and in half, argyrol proved to be inferior in therapeutic action to protargol.

In many of the cases in which protargol gave the best result, the difference in its favor was very pronounced; in some of them the "protargolized" eye recovered after two or three days of treatment, whereas there was still a discharge from the "argyrolized" eye at the end of a week. Some of these eyes at once recovered when protargol was substituted for argyrol. In four cases argyrol seemed to cause great irritation, a symptom which the author has never seen caused by silver nitrate or by protargol. After twenty-two comparative tests the inferiority of argyrol to protargol had become so marked that the tests were discontinued.

In thirteen cases argyrol was tested against silver nitrate. In seven of them the effects were equal, in six argyrol showed a slight superiority.

During the past summer (1906), the author has used protargol for several hundred cases of acute muco-purulent conjunctivitis, and the results have, in his opinion, been decidedly better than those obtained with silver nitrate in former years.

His conclusions are that protargol is a more satisfactory agent than either argyrol or silver nitrate for the treatment of acute muco-purulent conjunctivitis, and that argyrol is better than silver nitrate. Protargol is perfectly safe up to thirty-three per cent. and may probably be used

in even stronger solutions. Its application caused much less pain than silver nitrate, but more than argyrol. Silver nitrate in strong solutions is a very dangerous agent. It has unfortunately become the custom in Palestine to use ten per cent. and even stronger solutions with most lamentable effects. These results have been obtained in conjunctivitis caused by the Koch-Weeks' bacillus, and do not in any way contradict the results obtained by others who have tested the colloid silver salts upon gonorrheal conjunctivitis. There are several cases in the summer epidemic in which the gonococcus is present in large numbers, but they almost invariably lead to the non-ulcerative cases upon which this investigation was made.

A Successful Case of Transplantation of the Cornea. (Eine erfolgreiche totale Keratoplastik).

EDUARD ZIRM. (*Graefe's Archiv fuer Ophthalmologie*). Band LXIV, Heft 3.

Ophthalmic surgeons have long cherished visions of transplanting transparent cornea to replace opaque ones, but the dream has, hitherto, failed of realization, the new cornea either becoming opaque immediately or losing its transparence after a short time. In view of this, the success achieved by Zirm, in a case which he records, deserves wide-spread recognition. He is able to report a continuance of such transparency as was present at first, eight months after the performance of the operation. The essential facts of the case are these: A. G., a workman, forty-five years of age, received a quantity of unslacked lime in each eye on the morning of August 30, 1904, and presented himself at hospital on the same day. There was then a considerable quantity of lime still lying in the conjunctival sacs, and the membrane lining both upper lids was much burned superficially, and of a gray color; that of the lower lids was swollen and reddened. The cornea of each eye was of a gray-white color, and almost opaque, hardly permitting the pupil to be made out at all. The patient left hospital on November 17th following with both corneæ like ground glass, the iritides just barely visible; able to count fingers at one meter with the left eye and at half a meter with the right. He was re-admitted on November 22, 1905, showing then a very small degree of symblepharon, not sufficient to interfere with ordinary movements, with both corneæ entirely opaque except for the extreme periphery above the limbus; vision was reduced to knowledge of hand movements, but on both sides light perception and projection were prompt. Zirm determined to transplant cornea to replace the scar tissues, but he had to wait till December, 1905, for suitable material, which offered itself under the following circumstances: K. B., a boy of 11, injured his right eye in July, 1905, when a fragment of iron flew from a piece which he was striking. On admission, he was found to have a small scar at the upper edge of his cornea with an anterior synechia, and a pear-shaped pupil, behind which lay a grayish-white opaque layer. He was able to count fingers at two and one-half meters. Under chloroform two attempts were then

made to extract with the magnet the foreign body which was certainly present. At the first attempt the iris bulged forward, but after an iridectomy, performed to permit the escape of the foreign particle, it could not be induced to present, either with the large or the hand magnet; then, after a copious loss of fluid vitreous, the globe collapsed, and on December 7, 1905, the eye was excised. It was immediately immersed in warm normal saline solution. At the same time A. G. was put thoroughly under chloroform and transplantation to his right cornea carried out. The first step was the formation of a conjunctival bridge below; then, by means of v. Hippel's trephine, a disc was removed from the peripheral portion of the cornea of the enucleated eye. Then with the same trephine a disc, of course exactly of the same size, was removed from the leucomatous cornea, the transparent disc placed in the gap, and the bridge of conjunctiva drawn across it and stitched over. This operation was not a success.

At the same sitting another disc was removed from the cornea of the enucleated eye, this time from the center of it, immediately wrapped in gauze squeezed out of warm salt solution and kept moist and warm in a stream of aqueous vapor. With the greatest care and not a little difficulty, a disc was then removed from the patient's left cornea and the corresponding piece of clear cornea inserted in its place, care being taken to touch it with no instrument from the beginning of the operation to the end. The new patch on the cornea fitted perfectly both as to size and thickness, and in order to retain it satisfactorily in place Zirm inserted two stitches in the conjunctiva, making a St. Andrew's cross of thread over the centre of the flap.

A week later the graft in each eye was clear, and with the left eye he could count fingers. To make a long story short, in a few days the graft in the right eye began to give trouble, and had to be removed, but the left did better, and on January 12th he could count fingers with it at $3\frac{1}{2}$ meters quite readily. On February 23rd the note says that on focal illumination a very faint haze could be seen, but part of the pupil margin was actually visible. On March 11th, the patient went home, the clear graft looking black against the gray cloudy opaque cornea. On June 25th this was still true; the cornea itself was quite opaque, whitish, and intersected superficially with branching vessels. The graft, however, had none of these, and at its margin was very sharply differentiated from the cornea by a tendinous-looking ring. Just there the tissue was so perfectly clear that details of the iris could be made out quite well. Within that ring one or two very short, fine lines of opacity could with difficulty be made out; except for them the graft was quite transparent. None of the vessels mentioned above as being visible in the cornea penetrated the graft. The eye could even be examined with the ophthalmoscope and the disc carefully inspected. Vision was then 5/50, and with a convex lens 3/20 and J.13. The patient was able to get about by himself quite well, and even to perform such work as feeding and attending to cattle.

Previously, total failure has uniformly been the result of the attempt to transplant cornea, but in this case the cornea has remained transparent so long that one may expect the clearness to be permanent, instead

of lasting only for a very few weeks or days. What can be the reason of the difference in this patient? Partly, Zirm thinks, because the graft was an exact fit for the place in which it was laid; there was neither gap between it and the old cornea, nor was it in any way folded or crowded upon itself; and the graft was taken out "clean" with the trephine; there was no picking off with forceps and knife or scissors. The question is one, from first to last, of the vitality and the nourishment of the graft, which probably depends upon the loops of vessels around the periphery, but also upon the exchange with the aqueous chamber. Zirm considers that one strong point in favor of his patient was the youthfulness and healthfulness of the eye from which the graft was taken,—that of a healthy boy of eleven. This, combined with the fact that the graft, cut off without touch almost, and planted immediately in a precisely fitting gap, was really a factor of much importance. It is of no use whatever, as has been so frequently done, to attempt to graft a piece of the cornea of a shrunken, atrophic globe. There were points of advantage further in the condition of the patient's own eye,—in particular, the author considers the existence of superficial conjunctival vessels ramifying over the surface of the cornea tended to help to keep alive the nutrition of the superficial parts at least of the new graft. On the other hand, where suppuration of the cornea has previously taken place, the scar tissue is so hard that it is scarcely possible for the graft to obtain sufficient nutriment for it to live and remain transparent. In some future case, Zirm suggests that the actual operation might with advantage be preceded by such preparation as this: Some few weeks before operation he would mark out the part to be excised from the flat scar by a light touch with the trephine, then he would "raw" all the surrounding area superficially right up to the limbus; next he would undermine a zone of conjunctiva at the limbus, and by means of stitches bring the loosened membrane right across the future gap. When the consequent irritation had gone down he would proceed to the actual operation, confident that the above procedure had prepared the way, and had provided the needed increase in superficial vascularity and in tissue metabolism which is a requisite of success.

The Theory of Immunity in Ophthalmology (Die Immunitätstheorie in Ophthalmologie).

VICTOR REIS. *Wiener klinische Wochenschrift*, XIX, 29, 1907.

In this long and well-written paper, the principles of research in the pathogenesis and therapy of a number of little-understood eye-conditions, and the value of these researches, are shown in the improved methods of treatment that have resulted from them.

Experiments with *jequiritol*, as to the action of abrin and anti-abrin have made clear the precedence of local immunity over general; the antitoxin is produced in part by the conjunctiva reacting to the abrin-toxin, and in part through that portion of the poison which is absorbed.

The treatment of Septic Corneal Ulcer has been much advanced by the efforts towards artificially acquired immunity against pneumococcal infection. Active immunization against this infection gave positive results in pneumonia as long ago as 1892, but Römer was the first to begin investigations as to the influence of artificial immunization upon the course of ulcer serpens corneae, which in ninety-five per cent. of the cases has a pure pneumococcal infection. He tried, by introducing a polyvalent serum, to produce conditions similar to those naturally present when spontaneous healing of an ulcer serpens occurs. Such conditions may be brought about either by the production of antitoxins (as in diphtheria), or by the production of specific bacteriolysins (as in pneumonia). Römer's attempts in the direction of passive immunization, by using subcutaneous injections of pneumococcal serum, gave results which were for the most part unfavorable. His experiments, however, with dead pneumococcal cultures proved not only the harmlessness of active immunization, but showed also that within a few days a favorable influence was exerted upon the ulcer. The conclusion he came to therefore was that active immunization in combination with passive immunization should be the specific method of treatment in ulcer serpens corneae. In applying this treatment the active should precede the passive immunization; and as intra-muscular injections produce their effects the most quickly, the pneumococcal cultures should be injected intra-muscularly, and the serum subcutaneously,—a proceeding which can be carried out in two sittings.

The treatment of *Vitreous Hemorrhage* is another condition which has been brightened in outlook by experiment. Vitreous bleeding, artificially produced in rabbits, has been caused to disappear by hemolytic serum (Römer); but the only experiment so far made on man (by Elschning) led to severe inflammation of the globe.

Another question awaiting solution is the prevention or checking of *Senile Cataract*. Though about sixty cases of spontaneous cure have been reported they were such as were associated with disturbed nutrition due to acute inflammation or were cataracts complicated with disease of the chorioid which has been checked (Hess). The lens epithelium and fibres have been shown to be susceptible to the action of cytotoxins; and, with the degenerative changes that occur in the organism with age, substances injurious to the lens cells appear in the blood (Ehrlich and Morgenroth). Reis therefore repeats the saying that "the secret of senile cataract is in the senile serum." He discusses in detail the method of attack and protection, but admits that we are still ignorant of the satisfactory application of these observations to treatment.

Römer's view as to *Sympathetic Ophthalmia*, supported by his experiments with non-pathogenic hay-bacilli, viz., that it is a metastasis and not the result of a reflex influence by way of the ciliary nerves, gets further support in the paper, and Reis argues for the theory that the general circulation, rather than the roots of the optic nerve, is the path by which the inflammation is set up in the sympathizing eye.

Finally, the author considers the *Biological Characters of the Pigment-epithelium and of the Retina*. He points to the light that has been thrown

on the subjects by experiments which prove that these elements contain groups which neutralize the activity of hemolysins, and claims that to the vessels of the chorio-capillaris must be ascribed a protective influence for the perceptive elements of the retina against toxic substances.

GYNECOLOGY

Edited by John A. Sampson, M. D.

A Clinical Study of the Complications Arising in Sixty-three Consecutive Cases of Ovarian Tumors with Special Reference to Malignancy.

NORRIS. *American Journal of Obstetrics*, 1906, *LIII*, 30-50.

Norris reports the complications arising in a series of sixty-three cases of ovarian tumors operated on in the Gynecological Department of the University Hospital (Philadelphia) since 1899. Simple retention cysts, even when of moderate size were not considered in this series. The number of each variety of ovarian cysts were as follows:

Nineteen parovarian cysts.

Six dermoids.

Thirteen papillomata.

Fifteen multilocular ovarian cysts.

Ten adeno-carcinoma, either primarily carcinoma or carcinomatous changes in a benign cyst.

The complications including malignancy were as follows:

Ten cases with malignancy.

Ten cases of torsion.

One case with rupture without torsion.

One case with suppuration without torsion.

Forty-one cases with adhesions.

Two cases with ascites (excluding the malignant cases).

Two cases with hemorrhage.

Two cases with hydroureter as the result of pressure. Exclusion of the complications which were directly caused by the tumor; there were 27 other complicated cases, such as pregnancy, uterine myomata, inflammatory diseases of the tubes and ovaries, etc.

Malignancy occurred in ten cases, i. e., a little over 15.8 per cent., but this does not represent the full per cent. of malignancy as there were several inoperable cases. Of the ten malignant cases, four were apparently originally malignant, in four others malignant changes had taken place in an originally benign ovarian cyst and in the two remaining ones the type of the original growth was in doubt. The age of the ten cases varied from twenty-one to sixty-eight years. Two of the ten cases showed metastases at the time of the operation. Norris thinks that the prognosis is probably rather more favorable in those cases where malignant changes occur in an original benign ovarian cyst, than where the disease is primarily malignant.

Norris discusses the papillomata of which there were 13 in his series. He calls attention to the difficulties in diagnosing these cases when peritoneal implantation have recurred from general peritoneal carcinomatosis and therefore the importance of operating in these cases even though the entire growth may not be removed; for these so-called "semi-malignant" tumors are sometimes cured by incomplete operation.

Torsion of the pedicle occurred in ten cases; seven times in fifteen multilocular ovarian cysts; once in six dermoids; one in ten adeno-carcinomatous cysts, and once in thirteen papillomatous cysts: Of interest, four of the ten cases were large cysts; five medium sized and only one was small. This is unusual as this complication is more apt to occur in small cysts. In three of these ten cases the cyst had ruptured before operation and in nine cases there was more or less marked peritonitis. Three of the cases were in extremely bad condition at the time of operation having a high temperature, rapid pulse and extreme general weakness. There was no operative mortality in these ten cases.

The author calls attention to the fact that in his series of nineteen consecutive cases of parovarian cysts there were no complications or malignant changes, thus indicating that these cysts are far less dangerous than true ovarian cysts.

In these sixty-three cases there were ten cases of malignancy, ten of torsion, one of rupture and one of suppuration, *i. e.* one-third of the cases which, Norris thinks, would have died in a short time without operation. Nor can any one say how many of the remaining forty-two cases may have developed some fatal complication had not operative means been adopted. The operative mortality in the sixty-three cases was 3.17 per cent., being less than 2 per cent. for the benign cysts.

From the above it would seem that Norris is warranted in his statement, "that every case of ovarian tumor should be operated upon at once, unless there is some strong counter indication for the same."

A Report of Four Cases of Membranous Dysmenorrhea.

ELIZABETH MORSE. *Johns Hopkins Hospital Bulletin*, February, 1907.

The writer states that this condition is an unusual one as shown by the fact that only eleven specimens have been sent to the gynecological laboratory of the Johns Hopkins Hospital with this diagnosis, and of these only three proved to be genuine. The other specimens showed decidua in four instances, vaginal epithelium in two and one instance of uterine polyp and another of a blood clot.

In the first case reported the patient, aged twenty, has been passing these membranes at every menstrual period since its onset at the age of twelve. Menstruation has been regular but painful and on the third day the membrane was passed during a paroxysm of pain, after which the patient was relieved. An examination under ether was made and the pelvic organs were found to be normal (the uterus was low in the pelvis). The uterus was curetted.

When last heard from, six months after the curettage, the patient was still passing the membranes at the menstrual periods but with less pain.

Three membranes were examined microscopically and showed uterine mucosa with varying amounts of necrosis.

In the second case the patient was thirty years of age, married five years, never had any children but had had one or two abortions (probably induced) during her early married life. She began to pass membranes eight or nine months before the specimen was obtained which was sent to the laboratory. She has discharged one with each period and this has been associated with severe dysmenorrhea which developed coincidently with the appearance of the membranes. No pelvic examination was made and the physician has lost track of the patient.

Microscopically the membrane was composed almost entirely of stroma and the appearance indicated an inflammatory origin.

In the third case the patient was thirty-eight years of age, married twenty-two years and had had four children. She has had severe dysmenorrhea for seven years and during the last two or three years has passed membranes. At times complete casts of the uterus has been passed and this has been followed by profuse bleeding. Pelvic examination showed an enlarged, prolapsed uterus.

Microscopically the specimen showed normal uterine mucosa; the degenerative changes and fibrin so conspicuous in the other specimen were not present in this one.

The fourth specimen was a fibrinous cast of the uterus which, on account of the patient's history, was included in the report. The patient was aged twenty-four years, single, had had dysmenorrhea and irregular menstruation since its onset at the age of twelve years. During the last three years she has passed shreds of membrane.

The writer states that membranous dysmenorrhea is not disease in itself but a condition which develops under varying circumstances. In some instances a preceding endometritis appears to be an important etiological factor but this is not present in all cases. The prognosis is not good as it often persists in spite of treatment until the menopause; and sterility is the rule although a few patients have recovered and become pregnant.

In the true cases there is an exfoliation of the endometrium which is sometimes entire forming a triangular sac, the shape of the uterine cavity and even with rounded holes at the sites of the tubal openings.

The mechanism of the separation of the membrane is obscure but apparently degenerative changes play an important part. The diagnosis of this condition should not be made without a microscopical examination as other conditions may simulate it and especially fragments of vaginal epithelium and decidual casts. As has been previously implied the treatment has been unsatisfactory.

ALBANY MEDICAL ANNALS

Original Communications

ADDRESS DELIVERED AT THE OPENING OF THE
SEVENTY-SEVENTH SESSION OF THE ALBANY
MEDICAL COLLEGE, SEPTEMBER 24, 1907.

By WILLIS G. TUCKER, M. D.,
Professor of Chemistry and Toxicology.

Gentlemen:—We assemble to-day to inaugurate the seventy-seventh lecture session of the Albany Medical College. The need of any formal beginning has often been questioned, but the custom has been long established and there seems to be a certain propriety in maintaining old forms when they do not impede modern progress. To those here present who to-day begin, in a definite way, their medical study, this hour, which marks their entrance to a noble profession, is fraught with interest. It is for them a point of departure, and at such a time it may be that some, even of the seemingly insignificant things, said or done may make a lasting impress upon the mind, influence thought, or cast new light upon some problem which confronts them. In this hope I shall presently address myself particularly to these new-comers who eagerly, perhaps anxiously and very seriously, anticipate the experience which coming years have in store, but first of all it is proper that, as a representative of the faculty, I should extend to you all a most cordial welcome. Those who are coming back again feel, we hope, at home in their surroundings, and need not to be assured that they are welcome, but to him who is as yet a stranger within our gates we extend most cordial greeting. It is our hope that he may be one with us in all the aims and interests which we have in common, and that no seeming indifference on

our part, or aloofness on his, may hinder him from taking the place to which he is entitled and obtaining every advantage and benefit which comes to those who are engaged in a common pursuit if so be they will ally themselves with their fellow-workers and thus secure their share of the inspiration to be derived by those who are bound together by a common tie and are striving to reach the same goal. To this community of interests I shall later on allude, because I am convinced by long experience that no little evil and loss comes to some from lack of proper apprehension of this matter, and while it may be that those who are continuing and not entering upon their studies here, and whose student habits are in some measure established, will be little influenced by anything said, I am encouraged to hope that some of those who find themselves in new surroundings may be ready to receive some new truth, or view some old one in a new light, so that it may impress itself upon the mind and influence in some degree their conduct. And this, as already intimated, is one of the advantages which such occasions as the present possess,—that there are certain days in life and periods in the history of every individual when even the little things make their mark and find a lodgment in the memory. Which fact affords, as we have seen, some reason, or at least excuse, for such observances as this, which however perfunctory they may seem to some are yet by no means devoid of interest to others and may be made in some degree profitable to those who are disposed to view them aright.

This occasion has for me no ordinary interest. I stand to-day where on a similar occasion and for a like purpose I stood thirty-two years ago, and again twelve years ago, and as the duty which has for this third time been delegated to me is assigned in rotation to the members of our faculty it is in the highest degree improbable that I shall ever discharge it again. For many years as student and instructor, and for twenty-five years just closing as registrar, I have been connected with this school, and I cannot look about me without recalling the faces of those under whose instruction I sat, whom personally I have known, or with whom as teacher I have been associated, many of them long gone, who from this place have addressed successive classes occupying the seats which you are filling to-day. Two of these were founders of the school,—the brilliant surgeon March, and the versatile and accomplished anatomist Armsby, whose faces look down upon us from the canvases before you, and among those who at a later

period became connected with the school were Dean and Harris in medical jurisprudence, and the dignified Scotchman of the old school, McNaughton, and the elder Vander Poel in the department of practice; Quackenbush and Seymour in obstetrics; Pomfret and Webster in physiology; Haskins in anatomy; Lansing in materia medica, and Porter, J. S. Mosher and Perkins in chemistry. Coming into the faculty later, and after its reorganization in 1876, were Swinburne in surgery, Gray and E. R. Hun in neurology, and F. Townsend in physiology. Dr. Thomas Hun had withdrawn from active participation in college affairs before my time, though he served as emeritus professor and Dean of the Faculty from 1876 until his death twenty years later, and Dr. Howard Townsend had just passed off the scene when I came on it as a student. These men and many others, for I have named only those whom personally I have known and none of the living, will be remembered so long as the history of this school shall endure, for they labored zealously in creating, upbuilding and successfully maintaining it. We do not recall the fact to find warrant for our present existence, nor can we claim lenient judgment for present performance by reason of distinguished services rendered by our predecessors, but we may find both incentive and encouragement in the contemplation of their work, and I take it that it is as true of institutions as of individuals that a line of reputable ancestors is something to be thankful for and on the whole no unimportant asset.

The place in which we meet compares but indifferently perhaps with the showy buildings in which many schools are housed. To the newcomer it may not be impressive, but since mind is more than matter, individuals more than piles of brick and mortar, and an elegant material environment in itself no evidence of intellectual profundity or productivity in its tenants, you need find in this fact no reason for discouragement. Plato in the groves, Socrates in the streets of Athens and Christ in the market-place, remain types of the true scholar and real teachers of mankind, and while conditions have changed essential truths are in no way altered. Our academies need a better housing than groves afford, and our teachers a more elaborate apparatus than sufficed for ancient philosophers, but in our thinking we should take care to estimate things at their real and not at fictitious worth or we shall place too high a value upon material things in the sphere of education and science. Here the real values are incorporeal, intellectual

and spiritual, not material and directly convertible into dollars, nor are they directly producible by wealth. We stand in a great library, perhaps under the dome of the British Museum. Here are a million books collected at great labor and cost from all parts of the world and containing much of its best wisdom, but they are powerless to impart their knowledge to those who merely stand and gaze. And even he who longs to learn that which they hold in store is powerless to employ with real advantage more than the smallest fractional part of their great wealth. This wealth is like the energy potential in the coal deep buried in the earth, which must be mined with great toil, and burned to advantage, to convert it into impelling force and operating energy. Great fortunes, wisely employed, may render incalculable service to mankind, but it is an idle dream to suppose that dollars are directly convertible into brains, and that great gifts to education necessarily produce results proportional to their extent. Education, which is mental culture and implies a training of the faculties and development of the senses, is not on tap to be obtained by the turning of a faucet. When I survey the bewilderingly complex curriculums presented in the announcements of some of our universities I am reminded of the elaborate *menu* which is placed before the guest at a great hostelry. Everything is offered and one may choose this, and reject that, as his desires are simple or his greed consuming, but only that which is digested and assimilated serves the purposes of food and becomes a part of the body. Physical gain is not to be measured by the extent of the repast, nor is intellectual gain to be estimated by courses pursued, hours spent, experiments performed, books read, or even examinations passed. To hold otherwise is to entertain a very material conception and place too high an estimate on the value of the mechanical and material, the objective and external things which may be used to train and develop, but which cannot create, the subjective faculties which are the real entities because they are the springs of action.

Let us look at this matter a little more closely, observing at the outset that for the carrying on of original investigation in most departments of science, and more especially in the physical sciences, money, and much of it, may be required. But I am not considering the needs of the investigator, nor the cost of carrying on his work, which may be great, ought to be met, and generally is, in one way or another, provided for. I have more particularly

in mind the needs of institutions like our own, in which the work is mainly educational, not creative, and in which pupils are seeking to acquire some small part of the sum total of the world's accumulated and classified knowledge. Such pupils form the vast majority of those who attend our common schools and academies, our colleges and so-called universities, and our technical and professional schools as well. The average teacher in these institutions is himself not a genius, for the world's supply of such would scarce suffice to fill the places, but if he be competent and conscientious he is fulfilling a true mission, and the great work of education is carried on by teachers of this class. If he be deficient in those qualities which enable the born teacher to uplift his pupils, develop latent capacities, stimulate lagging energies, and broaden their mental outlook, so much the worse for him and his pupils, but his work is not to be condemned because much of it is but the repetition to successive classes of the rudiments of knowledge. He is dealing with the average intellect and with ordinary needs, and his work may be humble but it is not contemptible. It is honorable and all-important, and lies at the very root of our civilization and the intellectual progress of the race. Geniuses are born, not made. They soon out-run their instructors, and have indeed little need of them being generally their own best teachers and the teachers of others. No complex apparatus, nor educational system, can create or even do much to develop them, and the chief function of the teacher, and main aim of education, must ever be to classify, preserve, render available and transmit the world's knowledge to the largest number of people who will receive it.

Now to carry on much of this work of education extraordinary facilities are not necessarily required. Ordinary results are secured by the employment of ordinary means. Unless we establish a standard of ideal and absolute excellence and perfection, and demand that the teacher shall conform to such standard or cease his teaching, we must needs be patient and tolerant of present, though imperfect, conditions. To abolish schools whatever their grade, because the teaching force is not of the highest, the equipment not of the best, and the results obtained not entirely satisfactory, would be folly indeed. And yet this is essentially what some idealists would seem to advise. What shall be thought for instance of the sanity of a critic who has said at a conference of state medical examining boards recently held in Chicago, that

of the one hundred and fifty medical schools in this country only six were what they ought to be. We may well inquire of this critical essayist,—whose opinion as to what medical schools “ought to be” is to be taken? Are we to assume that the school with which the critic is connected is one of the six that are what they “ought to be.” If so, does it represent perfection! The absurdity of such utterances is the more clearly seen when we consider how far short of perfection are the results of all human endeavor. Churches, social organizations and philanthropies, legislative bodies, courts and political parties are not what they “ought to be,” but are they to be indiscriminately condemned, and are we to be told that we should be better off without them! Aside from an abstract sense in which it may be said that only pure truth and absolute perfection are admirable, and all error, incompleteness and insufficiency is abhorrent, it cannot be maintained that the existing machinery employed by men collectively in society serves no good purpose because of its imperfections. Such a view underlies much anarchistic philosophy, discourages the endeavor of those who are laboring to better existing conditions, and retards progress. In the discussion of educational problems the inferences and strictures of irrational critics are unproductive of good result, harmful in many ways, and their recommendations if carried into effect would work irreparable injury to our educational system.

In the sphere of education we have been, it seems to me, unduly impressed by mere size and extent of output. Having observed the advantages that in the industrial world accrue from combination and the annihilation of competition, and learned that profit depends upon increased output, diminished cost of production and control of the market, it has seemed to some fair to assume that the larger schools should be able to afford better educational facilities, and these at a lower cost, than the smaller ones, and that these therefore ought to be strengthened since they would seem to be destined in time to extinguish their weaker and less favored competitors. We are often told that the small college will have to go, and so convincing appear many of the arguments of those who hold this view that it is not surprising that they find ready acceptance among philanthropic millionaires who are seeking for channels into which they may turn some of their surplus wealth. But what are in reality the results of this concentration, which produces in some cases a kind of monopoly, and what may

we expect them to be in the future, are questions well worth raising. This rather startling fact I think is one of them, that our richest and most liberally endowed colleges and universities are the most expensive to the student, and that in proportion to their gain in wealth the cost of attendance upon them increases. In other words, large capital, extensive plants and increasing patronage do not seem to reduce the cost of the educational output. This is not in accordance with economic laws as we observe their operation in the industrial world, but the fact is one not difficult to explain. Increased attendance means larger buildings, with more lecture rooms and laboratories, and a larger teaching force, and the cost of providing these may greatly exceed the increased revenue from tuition fees, so that large patronage by no means implies diminished cost of maintenance *per capita*, but often the reverse, and for this reason some of our colleges are now seriously considering the advisability of limiting the size of the entering classes either arbitrarily or by raising their entrance requirements. Now can it be said that the larger institutions give so much better a return that the greater cost to the student is simply proportional to its real value. This view might be urged with some show of reason, for while it is a simple matter to determine the value of the material output of a manufacturing concern it is by no means easy to estimate moral and intellectual values. All sorts of arguments might be advanced as to better teachers because of better salaries, and better teaching because of better equipment. I do not propose to debate the question, but I hardly suppose that any one would claim that there is any definite relation between the size or wealth of an educational institution and its real effectiveness, so that it might be said for example in the case of an institution having a million dollars invested in its plant and another million in endowments, that, if these were doubled the institution would be capable of doing doubly efficient work. I take it that no reasonable person would undertake to maintain such a proposition as this and yet some such notion seems to be entertained by some people who are unreasonably impressed by large figures and discover a relation between bigness and excellence that is invisible to more judicious observers. If the money given to education was in all cases as wisely employed as that which has been applied to the establishment of free technical and trade schools for example, it is doubtless true that greater and more beneficent results might be accomplished, but when much of

it goes into unendowed and often unequipped buildings which can only be maintained by calling upon alumni and friends for aid, or by raising tuition and other fees, we can understand why many colleges are property poor and constantly begging. The building of great dormitories often makes sharper the lines of social cleavage in the student body, places a premium on wealth, encourages luxury and ostentation, and makes life the harder for the poor and self-respecting student, and money expended for building gorgeous chapels, great gymnasiums, magnificent dining-halls and the like is generally misapplied and productive of few good results. Even great library buildings and museums are often useless duplications, the maintaining of which makes large drafts upon income, and they may be of little direct benefit to the undergraduate student, and none at all to the advanced worker for whose needs they may be quite insufficient. These external and material things, often imposing, even magnificent in themselves, contribute little in any direct way to the legitimate educational work of an institution, and they often limit its activities and interfere with its real usefulness. Theirs is a fictitious value, largely sentimental, but the cost of maintaining them is great, and in this do we find further explanation of the fact that our largest and richest educational institutions are most expensive to their patrons. Nor can much satisfaction be obtained from a consideration of the claim that in many of our larger colleges opportunities in the way of scholarships are open to able and deserving students, because it is not so much the poor man of brilliant parts, able to secure these prizes, that needs aid and encouragement, as the man who is both poor and of average ability. He it is who most needs aid and for him more should be done. There is danger that the conditions in some of our endowed eastern universities may in the not far distant future come to resemble those existing at Oxford and Cambridge. Bishop Gore in the House of Lords has recently denied that these universities are training the "governing classes." "The working classes," he asserts, "are beginning to govern the kingdom, and they are excluded from universities which are playgrounds for the sons of the wealthy, the majority of them idlers." The influx of foreign students at Oxford, due to the establishment of the Rhodes scholarships, has shown the insufficiency of much of its machinery for latter-day needs, and in America we shall be losers and not gainers if through mistaken sentiment we copy the imperfections of English universities instead of aiming to develop

a type natural to our soil, adapted to our needs and in keeping with our institutions and social system. Chancellor MacCracken, in an address to teachers and students of the summer school of the New York University last month, said: "More than one university to-day is in great danger of being misunderstood. A few 'trust magnates' are giving to certain universities millions of dollars. These universities are in danger of being reckoned the purchased servants of a narrow caste. The sure and efficient way to escape this suspicion is for the universities to rid themselves of idle undergraduates who make no end of trouble, and to devote their money and energy to giving instruction and inspiration to the public teachers throughout the land. In a word, let the university cease to serve so largely the unproductive few and rather serve the productive and industrious many."

In referring as I have to the mis-use of moneys given to education, and in the few words that I shall add in taking leave of this topic, it has been far from my intention to imply that money is not needed in educational work. It is, and vastly more than has yet been given, or provided by any state, might be well applied, but my desire has been to emphasize the fact that large real estate holdings, costly buildings and even great collections in science, literature and art, are merely external things which may, or may not be, advantageously and economically employed, and should be regarded as means and not as ends in themselves, since they may be entirely unproductive unless wisely used, and even their possession may, by establishing false standards, restricting competition and in other ways, work harm rather than good. In a country like ours higher education should be in no way dependent upon the variable and perhaps ill-directed impulses of individuals, however generous and philanthropic they may be, but like our public school system which is our pride and great privilege, makes valuable to us our political rights, and is the chief conservator of our national well-being, it should be, and doubtless in time will be, administered by the state for all the people. Following the lead of western states we shall have great universities, of wider scope and greater size than any now existing, where instruction in all departments of learning will be given to all who are competent to avail themselves of the advantages offered and are desirous of embracing them. Can public funds be better expended than in the education of the people, and if the revenue of the state was largely increased by proper taxation as of incomes, increased

graduated inheritance taxes, and larger taxes upon stock-transfers, public franchises and many luxuries, the cost of higher education for the people would not be felt. I shall not stop to answer the objections of those who entertain the time-dishonored notion that public education is a form of charity, and that it is no part of the duty of the state to bring higher education to the masses, since the principle, well enunciated by the late President Harper at one of our University Convocations in this city not many years since, that a municipality has right to teach anything in its schools that its voters are willing to tax themselves to pay for, is seldom any longer denied. At its last session the Wisconsin legislature passed a law authorizing cities in that state to raise funds by tax for the establishment of trade schools, and similar and even more comprehensive action bids fair soon to be taken in other states. If the East does not follow the West in establishing, and liberally maintaining, state universities we have reason to fear that our smaller colleges and professional schools will be overshadowed and ultimately extinguished by the larger institutions which receive the great benefactions. Professor Lowell of Harvard, in an address delivered at Yale last April, shows that "a young man can go to-day more cheaply to a state university in another state that charges a differential fee, than to one of the eastern colleges." If the cost of attending our private and endowed institutions is to go on increasing the result inevitably will be that the larger and richer these become the more inaccessible will they be to the poor student who has greatest need of such advantages as they offer. I return to and emphasize this point because it is not a theoretical criticism, but an obvious fact. Our smaller colleges deserve and should receive fuller recognition and better support. Unless this is accorded them they are sure to suffer and the people to be the losers, but the ills resulting from the increasing cost of higher education may doubtless best be relieved by the state and in the manner indicated. The old objection to all this that we have doctors and lawyers enough but need more working people and servants, has been answered too often to need notice now. The law of supply and demand will take care of all that and, in any event, no social order can be lasting which seeks to perpetuate itself by keeping a part of the people down.

But another reason aside from general expediency why the state should undertake the duty of providing technical and higher education for the people may conveniently be stated now. During

recent years the state has assumed the right to regulate many industries and most of the professions in the public interest. In so doing it has incurred consequent responsibilities. Industrial independence is now held in check by state control, and at no time has the disposition to regulate trades and control corporations been so marked as at the present. And so with the professions also. The regulation of the practice of medicine amounts in most states to absolute control. The state sets the educational standard for the student entering the medical school, and it fixes the length and character of the course which he must pursue, and after his graduation requires him to give evidence of his competency by passing an examination before it confers upon him by license the right to practice medicine. Infractions or evasions of the medical laws are punishable by severe penalties and the control exercised by the state over the practitioner of medicine from the day of his entering into the ranks as a student is supreme. But, in raising the standard and regulating the practice of medicine the state has assumed new responsibilities and the time is not far distant when it will be recognized as its obvious duty to make adequate provision for the education of its people, not in medicine alone, but in all the professions and many other occupations which it regulates, or in which it has established standards. This need in no way interfere with private institutions any more than our public schools interfere with private academies at present. If the result of the establishment by the state of high standards in medicine, for instance, is to increase the cost of medical education so that the doors of the schools must be closed to many, then the duty of the state to make provision for the education of such is apparent. And this condition is approaching. That many schools of good standing and entire respectability continue to carry on their work, as in the past, through the income derived chiefly from tuition fees is true, but it will be found upon investigation that these schools are possessed of certain advantages, as of position, established reputation, or exemption from certain present restrictions, which account for their continued existence. We are told by some educational experts that it should cost the medical school three or four times as much to educate a student as it can reasonably demand from him in fees. In other words it amounts to this,—that no body of men having secured a charter in this state, for example, could provide the money to erect and equip a medical school which should comply with the requirements of law, and

carry on therein the work of medical education at a profit. Indeed a very large balance on the wrong side of the ledger must soon be shown if running expenses and interest on cost of plant is to be paid, and the school is to compete with other established schools. If this be true it must be evident that ordinary business enterprise cannot be depended upon to establish and maintain medical schools, and that the work of medical education must sooner or later be done either by private institutions enriched by wealthy benefactors, or in universities established and maintained by the state. We are in a period of rapid change. For a time the old order will suffice, but it cannot be for long. Some of us view these impending changes with anxious uncertainty; others with apathetic indifference, and others still see in the progressive movement that is taking place the promise of the satisfactory solution of a perplexing problem. For myself I cannot for a moment doubt that when the time comes for the people to decide whether the avenues that lead to professions like ours are to be kept open and safe-guarded to all the people, or whether they are to be narrowed by private control, or maintained by the self-sacrifice or generosity of individuals, they will speak with no uncertain voice.

And now before we take leave of this subject may I indicate some present tendencies which to my thinking need to be restrained, and which if not checked may result in the evolution of such a cumbersome and mechanical system of medical education and licensure as may threaten its overthrow, and in what I shall say, as also in all that has been said, excepting only in the words of welcome with which as a representative of the faculty I have greeted you, I give expression to individual opinions and am not speaking for my associates, so that if there be error or fault in anything said the blame is mine alone and should be imputed in no degree to any other. It behooves us, I think, to remember that our licensing boards are creatures of the state and that our whole educational system is subject to the will of the people and is not controlled by educators, specialists and salaried officials. Those who favor reasonable state control will therefore not urge reform of too radical a nature lest what has been gained be placed in jeopardy. In the state of Minnesota last winter so insistent a demand was made in the legislature for the opening of the state university to all applicants without regard to preliminary training that the project, though subversive and ill-advised, had to be considered and a compromise effected. Conditions in the east are

different, but if the policy of certain extremists, who are influential at present in our state and national associations, is adopted, opposition will be aroused which may precipitate a reaction. Those who favor higher standards and extreme state control base many of their arguments upon doubtful premises. I am sometimes inclined, for example, to disagree with those who hold that since the adoption of a preliminary education requirement by law in this state an improvement has been effected in the class of men entering the medical schools. Men who spell wretchedly and make bad work with simple arithmetical calculations still enter, armed with state credentials, and last year in this school more first-year men were conditioned than in any previous year within my recollection. Nor am I inclined to believe that the average reputable American physician to-day is in any recognizable degree superior to his predecessor of a quarter century ago *as a result* of state supervision. State control may eliminate ignoramuses and charlatans, although in many states the laws are so framed as to apply to physicians of established schools of practice while irregulars of many kinds and "healers" are exempted from their provisions, but however effectual they may be as restrictive measures laws are much less effective in elevating the people in any direction than many enthusiasts would have us believe. The educational systems in European countries where bureaucratic methods prevail do not always produce the most enlightened citizenship, and in a democracy institutions thrive best if the people are not governed too much. I think that our medical schools themselves may be trusted in greater measure to bring about needed reforms and advance medical interests than some noisy reformers who clamor for more and more stringent laws seem to suppose. It seems to me to be time that the medical profession asserted its dignity once more and resented the imputation that so large a number of its members are incompetent or unworthy that the public needs further protection by special legislation. Whatever others may think I shall not hesitate to raise my voice in opposition to such utterances as the following. Says the *Journal of the American Medical Association* in its issue of September 14, in the leading editorial: "Stronger safeguards should be placed about admission to medical practice in many of the states. The examining boards should be given supervision of all medical colleges within their respective states, with authority to pass on the entrance requirements of prospective medical students and to

issue or to have issued to medical students entrance certificates. They should have the right to inspect the medical colleges and to close such as are not sufficiently equipped or are not doing satisfactory work. * * * Without this right the boards are not in position to protect the public from incompetent physicians." And this is the utterance of a journal which is supposed to represent the profession of the United States, but which, under its present management, is, in the opinion of some, representative of commercialism in medicine in a pre-eminent degree. It floods the mails with circulars urging graduates of the schools against whom it brings this general charge of incompetency to ally themselves with the association and to subscribe for the journal, and it solicits the advertisements of the colleges with unwearied persistence. In the issue in which this editorial appears I find the advertisements of no less than ten medical schools which, according to its own statistical tables published in its issue of May 25, ranked in the lowest class as judged by the percentage of failures of their graduates before state examining boards during the year 1906. Now I do not hesitate to say that in my opinion there is not an examining board in any state in the Union which could safely be invested with such authority as the *Journal* recommends. In our own state, for example, this board is so constituted that although eighty-five per cent. of the physicians in the state are "regulars" they are represented by but four members upon a board of nine. In many of our states men of only average ability and capacity are drawing salaries and exercising a little brief authority under the laws in places often secured through political influence. What shall be thought of a proposal to place the medical schools of this country under their absolute control. We have been shamefaced too long, fearing perhaps that if we in the schools raised our voices in protest against these insistent demands it might be thought that we feared investigation or opposed reasonable and proper supervision. Such is not the fact, but silence may be construed at times into an admission of guilt and it is high time that we resented the implication that the medical schools of this country are, as a class, unmindful of their high responsibilities and are employing questionable methods in the conduct of their work. There are poor medical schools as there are poor schools of all kinds, but no general charge of incompetency or dishonesty can lie against them as a class, and we should no longer remain silent when such charges are either directly or impliedly made.

Now first of all it seems to me we must guard against anything that savors of trades-unionism in medicine. Physicians should be banded together that they may promote the interests of their profession in proper ways, but any action that looks like closing the doors, or putting up the bars, for the purpose of lessening the number of medical men, and restricting competition, ought not to be tolerated. We are often told that the number of physicians in the United States is out of all proportion to the population and greatly exceeds that in any other country, but this fact in itself has no particular significance and may be cause for thankfulness. Conditions are different. If these practitioners are competent, and can make a living, let us not complain but rather thank God that the American people are better supplied in this respect, as in so many others, than those of Russia, or even France, Germany or England. With those who start with the assumption that our social system needs to be conformed to the European or monarchical type I have no argument, but there is danger that well-disposed and entirely patriotic persons, who are possessed with a zeal for reform and advance which is not tempered by a wise discretion, will by much fussing and compiling of statistics and the everlasting iteration of certain ideas bring about changes which will not be betterments. Such are the people who would reduce everything to a strict numerical expression. They pursue their investigations with a foot-rule and hour-glass, place implicit faith in statistics, and would reduce all to a system. They would determine the competency of a student to enter upon the study of medicine by the special courses he has taken, and the hours devoted to each, and whether his work is to be counted or not is to be decided by a measurement of floor-spaces of the recitation rooms and laboratories in which he has been instructed, and the cash value of the apparatus employed. They would measure his subsequent progress by mathematical computations in which the factors are forty or fifty divisions of the medical curriculum, each subdivided into lectures, recitations, clinics, demonstrations and laboratory work, and the value of each determined by a laborious conversion of these into hours, which must be so apportioned as to preserve a certain ratio, and the sum total of which must not fall below a prescribed minimum. And whether this instruction which he has received has been good or bad is to be determined by a consideration of the population of the place in which the medical school is situated, the value of buildings and apparatus, the ratio of students to floor areas, the number of cases treated in

affiliated hospitals and dispensaries, and other such data. This is not fanciful. No month goes by that we are not requested to supply such information as this to individuals who are preparing papers to read at society meetings and conferences, to committees and councils of societies, and to state examining and licensing boards. These tiresome statisticians, with their arbitrary standards and mathematical deductions, seem to be in the ascendancy at present, but their enthusiasm needs to be restrained and saner views will ultimately prevail. Their information is often inexact because it is voluntarily and often carelessly given; their methods of computation are faulty, and their conclusions therefore unreliable. Their method takes no account of the past record and acknowledged reputation of institutions, of the experience, devotion and ability of teachers, and other elements the value of which is not determinable by the quantitative methods in which they so much delight, and in the case of the student it has no way of measuring natural aptitude, quickness of perception and the zeal which is often born of necessity. For myself I do not believe that either institutions or individuals can be measured up in this mechanical manner, and I do not think that such methods will be tolerated if they ever come to be rigorously applied in determining the standing of colleges and passing upon their credentials. It is not denied that great differences exist in the quality of the work done in the medical schools of this country, but I am clearly of opinion that the present tendency is to attach altogether too much importance to the institutions in which a man's education has been obtained. Do we not need to change our thinking in many respects? Institutions do not make men. They only aid a little in their development and the things which we have taught ourselves are the most valuable to us in the real work of life. "They do most by books," says Sir Thomas Browne in his "Christian Morals," "who could do much without them, and he that chiefly owes himself unto himself is the substantial man," and Darwin has said with greater deliberation and more seriously, and I beg you well to weigh his carefully chosen words, "I am inclined to agree with Francis Galton in believing that education and environment produce only a small effect on the mind of any one and that most of our qualities are innate." Manners are the result of, and much of our behavior is influenced by, education and environment, but our qualities are born in us and training has little effect upon the mind. Hence the mistake in attaching too much importance to time spent, and courses pursued, in institutions and there is great

danger that our laws regulating the practice of medicine and other callings may be patterned after too narrow, inelastic and mechanical a model and serve to restrain rather than encourage the development of the vocations they control.

Another tendency needing restraint is exhibited by certain specialists and faddists who urge upon colleges the necessity for giving instruction in all sorts of special subjects more or less closely related to medicine. Lest I give offense to some of these enthusiastic propagandists who push their projects with energy worthy of more important causes, I will make no catalogue of them. These zealous advocates read papers at society meetings; interrogate the colleges in tones implying that they are guilty of wilful neglect in failing to include their fondly cherished fads in their curriculums; and they organize societies and write books on their specialties. Unfortunately they take no account of the demands now made upon medical students and the relatively small importance of their particular branches, and they overlook the fact that such subjects as they would have taught in systematic courses are either already included in other departments, or else are of such a nature that the physician who has need of special knowledge concerning them can easily secure it for himself when the want is felt. Unless the colleges resist this kind of pressure from without that is brought to bear upon them either their courses must be lengthened or essential subjects must be curtailed.

We may indeed go further than this and say that the disposition to add anything to the present medical course which will necessitate lengthening it is a tendency that needs to be restrained. Unless the schools are to adopt an impracticable standard for which certain idealists seem to be contending, we may well be satisfied with the present four-year course. No one can deny the great advances which have been made within recent years, but is it not idle to suppose that educational courses can ever be made theoretically perfect and complete. Let us abandon the notion that the whole field should be covered in the medical course, and recognize the fact that as knowledge advances, and specialization increases, the ability of the individual to master the whole diminishes, so that the first and evident duty of the medical school should be to teach essential fundamentals and well-established principles, and leave many specialties, and most of the subjects which are still debatable, to be treated in optional courses or in other institutions.

And to my thinking it is no less true that the time spent in

preparatory work is often much too long. The favored pupil who leaves the high school or academy at eighteen, college at twenty-two, and the medical school at twenty-six, if he takes a year or two of hospital or other post-graduate work, or studies abroad, will hardly be able to begin his practice until he is approaching thirty. This is quite too long a preparation. The man who has nothing to do, and plenty to do it with, may spend his time thus if he so chooses and no one be the worse perhaps, but the average man cannot afford it, few men need it, and many men are injured by it. Doubtless some men mature less rapidly than others and need to be kept under tutors and guardians longer, but no educational system should be planned to meet the needs of the weaklings or the demands of idlers. "I esteem," says Montaigne in his essay on "Age," "that our souls show at twenty years of age what they mean to be. No soul that has not by that time given evidence of its strength will give proof of it afterwards. The qualities and natural virtues produce in that time or never what they have of vigor and beauty. It is possible that with those who occupy their time well science and experience may increase with life, but vivacity, promptitude and firmness, and other more important essential faculties, will fade and deteriorate. Therefore I complain of our laws; not that they leave us too long to our work, but that they do not employ us earlier; for considering the frailty of our life and the many ordinary accidents to which it is exposed I complain that so large a portion should be given up to childhood, to idleness and to apprenticeship." If that was sound doctrine in the sixteenth century it is even sounder in the twentieth and needs restatement. Too much time is wasted in preparatory schools and colleges, but if these things cannot be remedied then, to my thinking, the prospective medical student will do well to go from the high school directly to the medical college, or spend at the most not more than two years in intermediate work, which he may well devote chiefly to physics, chemistry, biology and modern languages. The old-fashioned college course is of little service to the student of medicine, and the time spent in pursuing it is frequently worse than wasted. The habits and associations which are formed are too often distinctly detrimental, and that four of the most valuable years in a man's life should be given over, as often they are, to aimless study, boyish frivolity and the formation of ideals which must be abandoned, and of habits which must be corrected in after life, is indeed deplorable. The youth who at eighteen or nineteen is without plans for the future and is carried

along by indulgent parents through a four-year course in college is little likely to be the better for it. If young men are to be sent to educational institutions for the purpose of increasing their social connections, winning laurels in athletics, touring the country in glee-clubs, or acquiring a superficial polish often referred to as culture, let the fact be admitted, but let us cease calling the experience thus obtained education. That a man should be at pains to learn much that later he ought to forget if he have due regard to his soul's health is disheartening indeed, but too often true of those who, without real disposition to learn, are yet engaged ostensibly in study.

But we must leave these general considerations and in so doing let me say that my object in discussing with you some of these educational problems has been neither to prejudice your minds nor to urge upon you the acceptance of my own views, but rather to incite you to investigate for yourselves and form your own conclusions. Do not accept standards and entertain opinions simply because they seem to be held by those about you. All real reforms have been brought about by discontented people,—not by the conservatives and self-satisfied people, but by the radicals who go to the root of matters and do not judge by the stalk or even the flower alone. In every community a certain number of prominent people desire, from motives of self-interest, to maintain unchanged the present order, but the larger part are inert and take their opinions ready-made from others. These would not willingly injure their fellow-men but they are satisfied to drift with the current, and feel it to be no part of their duty to inquire whether the multitude are as fortunate and as well-rewarded as themselves. Better far is it for us and for others if we think for ourselves, give expression to honest convictions, unrestrained by considerations of policy or temporary expediency, and when called upon to act, do so with the courage and decision which real convictions should impart.

And now will you allow me to add some words of advice and general counsel more particularly addressed to those who to-day make formal beginning of their medical study. You are entering, gentlemen, by different paths the portals which give you access to a noble profession. Do you recognize your responsibilities? If so the realization of them must of necessity affect your behavior and influence your lives. You are no longer boys, but men, associates and co-workers with your instructors, many of whom perhaps some of you will out-run in the race. Time will tell. See

that you start aright. Do not think that your course is divided up into periods, some of which are preparatory or probationary, and admit of idleness and dissipation. You could not make a greater mistake for it is not so. You are in the profession now. Claim all things to which you are entitled and act as befits men who have adopted a high calling. I beg you to listen to me when I say that you can make no greater mistake at the outset in your course than to attempt to inject into the medical school any of the boyish frivolities or foolish customs that obtain and may even be encouraged in high schools and colleges. Put all such things behind you for they have no place here. If you have not "been to college" do not, I beg of you, suppose that the medical school in some way is to supply an imaginary lack. Don't call yourself a "freshman." We have no "freshmen" here. Don't do the foolish things that many college students do because you are in a "college." Many of these things are bad enough even in the places where usage has in a sense sanctioned them, but they are entirely out of place in a professional school, and actions which might be condoned on a college campus become, if transferred to a medical school, merely disorderly acts, the perpetrators of which render themselves not only nuisances but liable to arrest for breach of the peace. I cannot put this matter too strongly and yet I do not wish to lay down any particular rules to govern your future conduct here. The whole matter lies in a nutshell. You are men, and have come here to associate yourselves with men engaged in the pursuit of knowledge whose desire it is to assist you in your work. They assume that your habits are fairly well formed, and that you are competent to enter upon the work which you have undertaken. They are willing to counsel and aid you, as friend may aid friend, but they do not desire to take the place of parent or guardian, and do not think that they should be held in any way responsible for your deportment. They stand upon no exalted pedestals and are neither omniscient nor oracular in their deliverances, and they expect from you only the courtesy which they are ready to render to you. That you are medical students then imposes new responsibilities and confers new dignities, but gives no license to disregard the ordinary rules of behavior which need no formal statement among gentlemen. Should there be any one here who has not appreciated this fact before and who is beginning his course under a misapprehension I beg him to revise his thinking that he may see things in their right relations to-day. The medical school is no place for boys and boyishness, and the medical

student of to-day should no more conform to the Bob Sawyer type than our trained nurses do to those of the Sarah Gamp pattern.

Now this does not mean that there should be no relaxation at proper times, nor that all manifestations of class feeling and college spirit are necessarily out of place. Men who are closely associated for considerable periods of time naturally form attachments and such association engenders a kind of *esprit de corps*, but among men this should not find expression in boyish acts and when it is manifested in buffoonery, lawlessness and physical conflicts the perpetrators of such acts become troublesome and disturbing elements. Our colleges are responsible for much of this lawlessness for they too frequently condone where they should condemn, and they have been slow to reprove much which they might well have repressed, but from the man who has entered the professional school better things are expected, and if he falls short in his behavior he will find no indulgent apologists to hold him blameless.

Now it may not seem very gracious in me to take advantage of the opportunity which this occasion presents to utter either warnings or complaints in seeming advance of any need of them, but the sincerity of the interest which I feel in your welfare prompts me to this frank speaking. Too many men who began their course with us last year made utter failure and find themselves again at the starting point, and for this reason, I believe, that they entirely misunderstood their position here. If I can save any one man from such lamentable failure I shall feel well satisfied to have put plain speaking in place of pleasant phrases and meaningless generalities. I can hardly suppose any one of you to be so short-sighted, but if any one is here to please parents or friends, to pass the time, or to secure an ornamental degree, he will find himself out of his element in such a school as this. Assuming, however, that you are here with good reason and honest purpose what can be more evident than that you should co-operate with your teachers in all ways that you may secure to yourselves the largest possible return for the time and the money which you are investing. If you slight your work, evade or seek to be excused from it, is it not evident that you are injuring only yourself? This would seem to be the merest commonplace, but it is far from being recognized by all. Men come here from schools and colleges, and they do not always realize that inherent conditions are different. In the college course the man whose only ambition is to get through and secure a degree can save himself trouble by selecting easy subjects where he has choice, by slighting his work to the point of

maintaining a bare passing stand, or by dint of cramming, cribbing and faking he may secure his ends and, in a sense, get the better of his instructors. But in a medical school it is not so. There are, and can be, no equivalents and electives, no purely disciplinary or culture studies, and there should be no superfluities. Every subject is connected with some other and all are essential. Perfection is not expected, and it is not denied that some matters may be sacrificed or slighted and one's standing maintained, but none the less it is true that just in so far as work is neglected the delinquent is a loser, and if any one is cheated he is the sufferer.

Another thing I think ought to be said. You will find the work here harder probably than any you have done before. You will need to devote to it more hours a day than you have ever probably given to study in any other institution. Some advisers would therefore caution you as to the care of your health and the dangers resulting from a too strenuous application, but these are more imaginary than real, and I shall give you no such caution. I have known many men injured by too much exercise and harmed by too much recreation, but I can recall no instance, in my own personal experience, of injury resulting from too much study. I do not deny the possibility, but I consider the probability so remote that words of caution are uncalled for. Such exercise as you need you can secure in simple and inexpensive ways. Leave out-door sports for the present to those who have leisure for such diversions, for you have other things to do and will have little time to give to them. School teachers, clergymen, studiously disposed persons generally, who lead sedentary lives, ordinarily enjoy the best health, and the risks and dangers to which the medical man is exposed do not result from over-study or too close confinement, and even if they did, remember that the mere preservation of health and prolongation of life are not the highest conceivable aims, and that these considerations may be, and often are, disregarded with advantage. Intellectual growth and spiritual supremacy are more important than muscular development and physical superiority, and while the sound mind in the sound body may be the ideal toward which we should strive, if either must suffer let it not be the mind.

Gentlemen, you are prosecuting your medical studies at a propitious and in a momentous time. The science of medicine is making great, and is probably destined to make still greater, advances. The place you have chosen for your study is favor-

ably situated and Albany is doing her part in the advance movement, to the progress of which you may have opportunity to contribute. Its importance and influence as a medical center is daily increasing. Its hospitals are of the best, its laboratories well manned and productive, and this old school is entirely in sympathy with the modern trend in the development of the medical sciences, and is employing modern methods in its work of teaching. Its graduates rank high in the profession, and occupy important and conspicuous places in the community. A high standard has here been established and it will be maintained. What more need I say than that we welcome you to our ranks, pledge you our aid and urge you to improve every opportunity offered you for gaining knowledge of the profession to which you have devoted your lives. May this day be an auspicious one to you all, full of encouragement to those who return after a season of rest to the prosecution of their studies, and presaging success to those who, with honest purpose and entire devotion, claim entrance to the ranks. On behalf of the faculty I greet you once again and bid you cordial welcome to this place.

ALBANY HOSPITAL.

FIFTH REPORT OF PAVILION F, DEPARTMENT FOR MENTAL DISEASES, FOR THE NINETEEN MONTHS ENDING SEPTEMBER 30, 1907.

By J. MONTGOMERY MOSHER, M. D.,

Attending Specialist in Mental Diseases.

To the Board of Governors:

I have the honor to present the fifth report of the operations of Pavilion F, for the nineteen months ending September 30, 1907.

The Hospital year having been changed by your board, to end on the last day of September instead of the last day of February, makes necessary for this report the record of the longer period. For convenience, however, this period may be assumed to be the fifth year of the work of the Pavilion, and in this report will be so regarded.

There remained in the Pavilion on March 1, 1906, fourteen patients, seven men and seven women. There have been admitted two hundred and twenty-eight men and one hundred and

fifty-eight women. The whole number of patients under treatment was, therefore, four hundred.

There have been discharged three hundred and eighty-four patients, two hundred and thirty men and one hundred and fifty-four women; and there remained in the Pavilion at the end of the nineteen months five men and eleven women.

The following tables show the forms of disease and the results of treatment for the period of nineteen months, and since the opening of the Pavilion:

TABLE I.—SHOWING THE FORMS OF DISEASE AND THE RESULTS OF TREATMENT FOR THE NINETEEN MONTHS FROM MARCH 1, 1906, TO SEPTEMBER 30, 1907, INCLUSIVE.

FORM OF DISEASE.	Recovered		Improved		Unimproved		Died		Remaining		Total		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Acute delirium.....	4	7	3	6	...	1	2	4	1	...	10	18	28
Confusional insanity...	...	1	2	...	2	...	1	...	1	...	6	1	7
Melancholia.....	3	7	8	18	4	12	...	...	4	15	41	56	
Mania.....	3	2	3	2	6	6	...	...	2	12	12	24	
Primary dementia...	...	...	1	2	11	...	...	...	1	12	3	15	
Recurrent insanity...	...	...	2	3	3	5	...	...	1	...	6	8	14
Chronic delusional insanity.....	...	...	...	1	3	11	...	...	...	3	12	15	
General paralysis.....	...	...	1	...	4	...	1	...	1	...	7	...	7
Terminal dementia...	...	...	7	6	21	13	5	5	1	1	34	25	59
Imbecility and idiocy.....	...	...	5	3	6	7	...	...	1	11	11	22	
Acute alcoholic delirium.....	34	2	7	3	...	...	4	1	...	...	45	6	51
Alcoholism.....	...	...	36	5	4	...	...	...	...	40	5	45	
Drug addiction.....	3	1	4	1	1	2	...	...	1	8	5	13	
Uræmia.....	...	...	...	...	...	...	1	...	...	1	...	1	
Epilepsy.....	...	...	2	...	2	...	...	...	...	2	2	4	
Neurasthenia.....	1	...	3	1	1	2	...	...	...	5	3	8	
Hysteria.....	...	...	1	5	...	...	...	...	1	1	6	7	
Hypochondriasis.....	...	...	3	...	...	...	1	...	...	4	...	4	
Chorea minor.....	1	...	...	...	1	...	...	...	...	...	2	2	
Organic brain disease...	...	...	1	...	3	...	3	...	...	7	...	7	
Cerebral concussion....	...	...	1	...	...	...	...	...	...	1	...	1	
Meningitis.....	...	...	...	...	...	...	1	...	...	1	...	1	
Cerebro-spinal meningitis.....	1	...	...	...	...	...	...	...	...	1	...	1	
Tuberculosis.....	...	...	...	...	...	1	...	...	...	1	...	1	
Fracture of skull.....	...	...	...	...	...	...	1	...	...	1	...	1	
Multiple neuritis.....	...	...	...	...	...	1	...	...	...	1	...	1	
Multiple fibromatosis.....	...	...	...	...	...	...	...	1	...	1	...	1	
No diagnosis.....	...	...	...	...	...	...	...	...	...	2	2	4	
Totals.....	49	21	90	56	69	64	20	11	5	11	235	165	400

TABLE II.—SHOWING THE FORMS OF DISEASE AND THE RESULTS OF TREATMENT SINCE THE OPENING OF THE PAVILION, FEBRUARY 18, 1902.

FORM OF DISEASE.	Recovered		Improved		Unimproved		Died		Re- maining		Total		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Acute delirium.....	21	23	8	11	1	6	8	8	1	...	39	48	87
Confusional insanity.	5	2	5	6	2	2	4	2	1	...	17	12	29
Melancholia.....	17	21	22	53	22	50	...	3	...	4	61	131	192
Mania.....	5	7	12	14	13	18	1	...	...	2	31	41	72
Primary dementia...	1	2	7	3	18	3	...	...	...	1	26	9	35
Recurrent insanity..	...	...	3	9	5	6	...	...	1	...	9	15	24
Chronic delusional insanity.....	...	...	1	3	16	23	...	...	...	...	17	26	43
General paralysis....	...	...	2	...	21	...	2	...	1	...	26	...	26
Terminal dementia...	...	...	13	18	52	45	14	10	1	1	80	74	154
Imbecility and idiocy	...	...	13	7	11	10	...	...	...	1	24	18	42
Acute alcoholic de- lirium.....	124	8	18	6	2	...	15	2	...	...	159	16	175
Alcoholism.....	19	5	72	7	6	2	...	...	...	...	97	14	111
Drug addiction.....	5	3	6	4	1	3	1	2	...	1	13	13	26
Ptomaine poisoning.	1	2	...	...	...	...	...	...	...	...	1	2	3
Uræmia.....	...	...	...	...	...	...	3	...	...	...	3	...	3
Eclampsia.....	...	1	1	...	...	...	...	1	...	...	1	2	3
Epilepsy.....	...	...	8	1	6	3	...	...	...	...	14	4	18
Neurasthenia.....	3	...	18	5	2	7	...	...	...	...	23	12	35
Hysteria.....	1	1	1	9	1	...	...	...	...	1	3	11	14
Chorea minor.....	1	1	...	...	1	1	...	...	...	...	2	2	4
Exophthalmic goitre.	...	...	...	1	...	...	...	...	...	...	...	1	1
Nervousness.....	...	1	...	...	...	...	...	...	...	...	...	1	1
Hypochondriasis....	...	...	7	...	1	...	1	...	...	...	9	...	9
Organic brain disease	...	...	9	3	4	2	4	3	...	...	17	8	25
Cerebral concussion..	...	...	3	...	...	...	...	...	...	...	3	...	3
Locomotor ataxia...	...	...	...	2	...	1	...	...	...	...	...	3	3
Myclitis.....	...	...	...	...	...	...	...	1	...	...	1	...	1
Cerebro-spinal men- ingitis.....	1	...	...	...	...	...	...	...	...	...	1	...	1
Meningitis.....	...	...	...	...	...	...	1	...	...	...	1	...	1
Multiple neuritis....	...	...	...	...	...	1	...	...	...	...	1	...	1
Hydrophobia.....	...	...	...	...	...	...	1	...	...	...	1	...	1
Tuberculosis.....	...	...	...	...	2	1	1	...	...	...	3	1	4
Jaundice.....	...	...	...	...	...	...	...	1	...	...	1	...	1
Pneumonia.....	...	...	...	...	...	...	1	1	...	...	1	1	2
Pernicious anæmia...	...	...	...	1	...	...	...	1	...	...	2	...	2
Gastro-enteritis....	...	...	...	...	...	...	1	...	...	...	1	...	1
Fracture of skull....	...	...	...	...	...	...	2	...	...	...	2	...	2
Multiple fibromatosis	...	...	...	...	...	...	...	1	...	...	1	...	1
Malingering.....	...	...	...	...	1	...	...	...	...	...	1	...	1
No diagnosis.....	...	...	...	...	...	...	...	...	...	...	8	5	13
Totals.....	204	77	229	163	188	184	60	36	5	11	694	476	1170

The function of Pavilion F is peculiar, and another institution of its character does not exist, at any rate, in this country. It is true that a century or more ago cases of mental disease were received in two or three hospitals, and one of these, the Pennsylvania Hospital at Philadelphia, was founded largely on the necessities of people "distemper'd in mind." But these patients were soon removed to special institutions, and have since been so provided for. On account of the seclusion and restraint required they have been recognized and safeguarded by statutory enactment. So exhaustively legalized has been the admission to institutions for the insane that they have become custodial rather than remedial—asylums rather than hospitals. The medical officers of asylums have long understood that insanity is a manifestation of some pathological state, and have urged this more intelligent conception on the part of the public. The realization of their wishes has been hampered in many ways, and although conditions are better, they are yet very unsatisfactory. Scientific truths spread slowly from their source to the fulfilment of their purpose, nevertheless, if practical, they must ultimately receive permanent and universal acceptance. It may well be a cause of gratification to all who have engaged in this long struggle to improve the condition of the insane that the answer to their appeals is more general and more generous. A demand now exists for the treatment of insanity in the early stages, before the disease has made such progress as to be incurable and to render its victim a helpless burden for life. In response to this demand, growing upon abuses in this community which had become too flagrant to be tolerated, Pavilion F was established. It has been aptly described as a ward "for the early treatment of mental disease under the voluntary relation, without commitment as insane."*

The purpose of the Pavilion is the treatment of mental disorders upon the same broad principles as the treatment of other diseases in a general hospital, with no more than necessary discrimination between a mental and a physical ailment. There is, however, a fundamental distinction, lying in the helplessness and dependence of the patient, which places a peculiar and exacting responsibility upon the hospital, in the highest sense appealing to the moral sense of the management. Deficient in the

*Dr. Owen Copp: National Conference of Charities and Correction, 1907.

exercise of judgment and reason, with blunted senses, the victim of a mental affection is placed in a position requiring not only treatment but intelligent and honest guardianship. When a patient unconscious from anesthetics submits to the surgeon, he places in the hand of that surgeon for the time being the responsibility of his safety and his life. The moral obligation assumed by the surgeon is the greatest that can be placed upon a human being, for whatever decision he may reach or action he may take cannot be submitted to the individual whom it most concerns. The same ethical problem presents itself in cases of mental disease modified by opportunities for conference with those most interested in the welfare of the patient.

As the law, in spirit at least, stands for the protection of irresponsible and incompetent persons, the question naturally arises as to the degree of responsibility Pavilion F may assume in administering to patients in this class. It may safely be answered that such a department could not exist except in an institution of the highest standing. If the Albany Hospital were not an integral part of the community, standing in its purpose as close to the individual as his home, and if it were not understood that the best sense and the best effort were put forth to fulfill the obligation of its high purpose,—in short, if confidence were destroyed, there would follow the closing of the doors.

The function of a hospital is two-fold: it is first, for the treatment of disease, and second, for the discovery of methods of prevention or relief of disease. The latter may be designated as scientific research. The study of large numbers of patients, comparison or contrast of symptoms, the effects of remedial measures, should result in the determination of facts to advance the comfort and the good of humanity. In the five and a half years since the opening of Pavilion F eleven hundred and seventy patients have been admitted. In the observation of this large number it is to be hoped that some truths have been revealed. Surely considerable experience has been gained of value in the daily service of the wards. Two facts have been noted which are of the greatest importance in the management of patients. The first depends upon the natural rhythm or periodicity of nervous action. Normally there is a variation in the intensity of action or tone of the nervous system, and the variations are accentuated by disease. In the incipient stages of mental dis-

order, before the mind is submerged, there are remissions, and periods of normal and abnormal mental action alternate. The duration of the intervals is not constant; in some cases they occur in a very small space of time—a few minutes; in others the periods of repose and of morbid activity may cover hours.

The second important phenomenon, in greater or less degree related to the preceding, is the consciousness of disease possessed by the patient. The realization of the ungovernable action of the mind, and the apprehension aroused by this subjective sense of the loss of self control are responsible for many complicating and sometimes confusing manifestations. The dread of insanity is so deeply grounded as to appear a part of the inheritance of the race. The time has not yet come when insanity is universally regarded as a disease, and not as a disgrace incident upon divine displeasure. The feeling of helplessness and fear is natural, and not infrequently throws the patient into such mental turmoil that the actual symptoms are obscured and many bizarre and otherwise unaccountable actions puzzle the observer.

To the lack of appreciation of these conditions may be attributed much of the mismanagement of patients. It is not expected, of course, that the members of a family for the first time subjected to a visitation of this kind shall understand the import of its symptoms, but it is essential that hospital physicians and nurses should act with the intelligence bred of experience. With keener insight into the causes of irregular actions and with environment better suited to meet them, the hospital should at once prove a relief, and not a source of greater trouble. Apart from correcting perverted physical functions underlying attacks of mental disease, success in treatment depends very largely upon understanding the patient,—knowledge of the source or reason of actions and speech, and discretion in meeting or correcting them. Herein lies the value of the hospital and the failure of the home. The departure from home frequently impresses the patient as the first downward step of a serious and perhaps irremediable misfortune, and greater unrest results, which it is the desire of the hospital to reduce to a minimum. The family or immediate friends are requested to visit frequently, as their presence gives reassurance to the patient. Their suggestions to the attendants bring into the conduct of the case valuable knowledge of the temperament, tastes or other individu-

ality, which lie beyond the disease, though coloring and modifying the symptoms. The family physician is also invited to retain his interest and co-operate with the hospital, and physicians as a rule have responded courteously to this request.

Thus when the resources of the home are inadequate, those of the hospital are sought, and the family have it in their power to render most valuable assistance under the guidance of the hospital, an advantage which is lost when patients are sent away. Although occasionally there is difficulty in harmonizing a number of individuals whose interests are centered upon one problem, and although a mistaken sense of pride prompts attempts at concealment of alienation, the plan has proved successful. To it may be attributed some recoveries and a marked reduction in the duration of the attack. It is based upon the most liberal conception of the claims of the patient, which is the first consideration. It brings into view the character of the work, dissipates all mystery and concealment and establishes confidence.

ALCOHOLISM

The abuse of alcohol leads to conditions which intrude themselves upon all who have in any way to deal with diseased or defective states of mind. The problems presented by alcoholics are not only medical, but social, and are often very difficult of solution. Patients who are under the influence of alcohol present groups of symptoms which may imitate any form of mental alienation or decay, and pass through the three stages of exhilaration, depression and stupor—the basic types of abnormal mental action—with such elaboration of these stages, as may be determined by idiosyncrasy. It is convenient to separate these patients into two groups, in which are included, first, cases of alcoholic intoxication or drunkenness, and second, mental disease or degeneration caused by alcohol, which exists after the indulgence has ceased. Midway between the two groups, or allied with each, is delirium tremens, or acute alcoholic delirium.

In acute alcoholism, or ordinary drunkenness, the direct effect of the poison is seen in increase of mental and physical activity, which soon becomes pronounced exhilaration. The craving for the stimulant and the uncontrollable exaggeration of personality soon produce antagonisms, and the victim becomes a menace. His business is neglected, his person disordered and his family humiliated. In this desperate predicament any available relief

is sought, and the hospital frequently petitioned. But the offender, apparently beside himself, suddenly throws off the mental mackintosh, and clothed, temporarily, in his right mind, defends himself and defeats the projects for his relief and for the protection of his interests. The hospital has no authority to detain such patients, and they are usually undesirable. To submit others to the disorder and turbulence caused by alcoholics is an injustice, and, generally, an unwarranted presumption upon the sentiment of the institution. Later, when remorse succeeds to the early stimulation and the victim, with Cassio, bewails "that men should put an enemy in their mouths to steal away their brains," regret is not inapt to be tempered with resentment, the invasion of liberty or privilege which may have been made by well meaning friends is regarded as having been unwarranted, and obligations assumed by others are apt to be repudiated. It was early anticipated by those not acquainted with its intention that Pavilion F would become a resort for drunkards, and it is highly creditable to the hospital management and the public officials of the county that this perversion of its purpose has not prevailed; that alcoholics have been only occasionally received, and then when willing and needing medical care, and that it has been able at all times to treat cases of mental disease without association of this kind. And this success may be the more a source of self-gratulation when it is known that for hospitals in other cities where a similar ward has been proposed, the authorities have hesitated in fear of this possible or probable subversion of the plan.

Cases of delirium tremens, on the other hand, are willingly admitted. This condition is serious, not infrequently fatal, and all the resources of the hospital are needed when a life is at stake.

In order that there may be no misinterpretation of the results, all cases of alcoholism and of drug intoxication are classed separately in the statistical tables.

TREATMENT

The general plan of treatment described in previous reports has been followed. In recoverable cases the lowered state of vitality has been universally prominent, supposed to be associated with an abnormal blood condition due to the presence in the

circulation of poisons generated within the body. The first effort is toward the elimination of noxious substances and the restoration of weight and strength. It is anticipated that a healthy mind will be found in a healthy body, and the body presents symptoms which medical training is cultivated to observe. The most obtrusive of these symptoms is loss of sleep. The last half century has been prolific in the introduction of remedies to induce sleep. It would seem superfluous to criticize these drugs as harmful, and the failure to induce natural sleep by artificial means might be regarded as axiomatic, were it not that these poisons are in almost universal use. Shakespeare knew this when he made Iago say:

“Not poppy, nor mandragora,
Nor all the drowsy syrups of the world,
Shall ever medicine thee to that sweet sleep.”

An important part of the work done in Pavilion F has been the counteraction of the effects of large doses of these soporific drugs, to which is ascribed many complications of the disease. The return of natural sleep after the reestablishment of normal physical function has been so general that all doubt upon the correctness of this assumption has been removed. The use of saline infusions, mentioned in former reports has been continued when they are needed. As a combined stimulant and sedative, the saline infusion possesses remarkable properties. The remedy should be used with discretion, and in toxemia and delirium not only relieves distressing symptoms but saves life.

The state of nutrition and body weight are carefully observed in every case. The loss of weight in acute mental attacks is often extraordinary, and one case is on record in which the weight of a patient was doubled during the hospital residence. With convalescence a ravenous appetite is developed, and abundance of easily digested food is required. The most satisfactory plan consists in the liberal use of eggs and milk, and these articles are a necessary addition to any established dietary.

DISCHARGES

Of the three hundred and eighty-four patients discharged seventy recovered and one hundred and fifty-two were improved. The percentage of cases thus distinctly benefited is fifty-five and

one half. Since the opening of the Pavilion the percentage of patients discharged as recovered and improved has been fifty-seven.

One hundred and thirty patients were discharged unimproved and thirty-one died. The causes of death were: exhaustion from acute delirium, six; general paralysis, one; acute alcoholic delirium, five; organic disease of the brain, three; pneumonia and neuritis, one; meningitis, one; fracture of the skull, one; nephritis, one; hypochondriasis, one; multiple fibromatosis, one; old age, ten.

FINANCIAL STATEMENT

Received from public patients.....	\$1,398 86
Received from private patients.....	14,155 42
	<hr/>
Total.	\$15,554 28
	<hr/>
The number of days' treatment.....	11,453
The average income for each patient per week.....	\$9 51
	<hr/>

ENDOWMENT FUND

Shortly after the Pavilion was opened, in 1902, a letter was received from the late Mrs. Julia McCarty, expressing sympathy with its objects and enclosing a check for five hundred dollars. As the building and furniture were new, there was no immediate need of this money, and it was set aside by the Board of Governors as an endowment fund. The interest has not yet accumulated to be available for the maintenance of patients, but the establishment of a fund for this purpose was thought to be suggestive. Unfortunately no other gift of the kind has been received, although after the experience derived from the care of nearly twelve hundred patients, its need has been amply demonstrated. During the week in which this report was in preparation a young girl was admitted in a state of active delirium and violence. At the end of five days some sleep had been attained, the condition of the tongue and pulse had improved, the nurses had attracted her attention and her good will, and the restlessness and excitement were diminishing. After the period of uncontrollable activity, there were indubitable evidences of the approaching convalescence, when, at this critical point, the patient

was transferred to another institution. Whatever had been gained by faithful care was thus in a moment ruthlessly destroyed, medical propriety was violated and a cruel interruption of treatment was made. This is only one instance, of which there are many. Such a proceeding would not be tolerated or even suggested in the management of a case of purely physical disease. It is a striking relic of the crude conception of mental defect which prevails in custom and in statute after a century of agitation in behalf of the insane, and reminds us again of King Lear's Tom o' Bedlam:

"Whom the foul fiend hath led through fire and through flame, and through ford and whirlpool, o'er bog and quagmire; that hath laid knives under his pillow, and halters in his pew; set ratsbane by his porridge; made him proud of heart, to ride on a bay trotting horse over four-inched bridges, to curse his own shadow for a traitor."

The difficulty lies in the want of money. The hospital struggles to sustain the high obligation assumed in behalf of the community. The need of an endowment to be used for the expense of maintenance of patients in Pavilion F is urgent, that these helpless victims may be assisted by every possible means to the restoration of reason, and may not be so mismanaged and trafficked as to change a recoverable disease into a state of permanent disability.

ACKNOWLEDGMENT

The interest of the Board of Governors of the Hospital and Managers of the Training School for Nurses continues unabated. Visits of inspection and inquiry have been regularly made, and the details of administration fully considered. The work of the nurses merits the greatest approbation. There has been no indication of unwillingness, even when arduous and unpleasant tasks are required. Patience and persistence have been almost invariable.

To the Superintendent of the Poor of the County, Commissioner William H. Storrs, the hospital is indebted for unvarying courtesy. He has shown intelligent appreciation of the real purposes of Pavilion F, and has assisted in every way in its proper administration. The indigent defective classes of the county

appeal to him for relief, and naturally desire the most liberal provision. Were it not for his excellent discrimination the work of the hospital would be seriously embarrassed by the commitment of persons who are more properly subjects for other institutions. We are under a debt of gratitude to him.

The following gifts have been received: Subscriptions to the *Argus*, *Munsey's Magazine*, *The Argosy*, *The Strand Magazine*, *The Ladies' Home Journal*, and *Pearson's Magazine* have been continued by Mr. and Mrs. P. K. Dederick, jr.; and subscription to *McClure's Magazine* for the years 1907 and 1908 has been given by "a friend;" magazines have been received from Mrs. Frederick Tillinghast, Miss Knowles and Miss Diack; books from Mrs. Judson and Mrs. Martin H. Glynn; an Easter lily was received from the Trinity Methodist Church, a plant from Miss C. Miller; and curtains for the windows and the bookcase have been given by Mrs. Grange Sard and Miss Moag. It is hardly necessary to say that these gifts are of great value. The library donated by Mr. and Mrs. P. K. Dederick, jr., has proved most acceptable and has been in constant use by patients. Reading and games serve a more definite purpose than the mere amusement of the patient, and the diversion from morbid thought accomplished by these means becomes a valuable remedial resource. The generosity of the friends of the hospital may be again invoked in the beautifying of this most important department, with confidence that the appeal will not be in vain.

PUERPERAL INFECTION FROM THE GONOCOCCUS.

By ELLICE McDONALD, M. D.,

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Investigation of the causes of puerperal peritonitis has proved that it is caused by many organisms of which the streptococcus is most prominent, both in severity and frequency. No inconsiderable proportion of cases of puerperal infection are, however, the result of infection with the more uncommon organisms, such as staphylococcus, gonococcus and pneumococcus. The streptococcus, however, is the infecting organism in the majority of

cases and was present in forty per cent. of all cases in a collection of 498, collected by the author (1), in which the contents of the uterus was studied bacteriologically.

In this study it was interesting to observe that in the earlier cases the gonococcus was but infrequently mentioned, but coincident with improvement in bacteriological technique, the frequency of isolation from the uterine lochia was much increased. Heretofore widely divergent views have been held in regard to the pathogenicity and frequency of the gonococcus as a cause of puerperal infection. Bumm and Wertheim are inclined (2,3) to believe that it is not a frequent infecting organism, and Sanger (4) thinks that it may be a more common cause of puerperal and post-puerperal disease.

Most investigations, however, have been wanting in bacteriological thoroughness, and the organism has not been found. The difficulty of cultivation of the organism has been the greatest hindrance to its isolation. Another frequent source of error is that the cultures have most commonly been made soon after the first exhibition of temperature and while the lochia contained much blood and few pus cells. The gonococcus cannot readily be found in smears under these conditions, but is best discovered when numerous pus cells exist and after the infection has advanced somewhat. It was also found, in a study of seventeen cases of gonococcus puerperal infection by Stone and the author (5) that the gonococcus was usually readily found in smears from the uterine lochia after the discharge has become purulent.

Of these seventeen cases, twelve had rises of temperature to about 100° F., and when the cases of mixed infection were eliminated, nine of fourteen cases, in which the gonococcus was found in the lochia, had such rises of temperature. To consider these nine cases first, the fever was mild in three, moderately severe in four, and in two was severe; in five the onset of fever was distributed over the first week, and in one it was as late as the thirteenth day. The average duration of the fever was four and one-tenth days, varying from three cases in which the fever lasted one day to two cases in which it lasted nine days.

(1) McDonald, Montreal Med. Jour., August, 1905.

(2) Bumm, Handbuch der Gynaekologie, Band 1.

(3) Wertheim, Verhandl. der Deutsch. Gesellsch. f. Gynaekologie, 1895.

(4) Sanger, Verhandl. d. Deutsch. Ges. f. Gynaekologie, 1886, 177.

(5) Stone and McDonald, Surgery, Gynecology and Obst., Febr., 1906.

The fever was in all cases very irregular and followed no definite curve. In one case the infection was very severe, but in the majority of cases this was not so, and temperature curves corresponding to the so-called "sapraemic" or septic absorption temperature were more frequently found, the temperature suddenly rising and returning to normal in three or four days.

The three cases of mixed infection had widely varied courses. One of gonococcus and colon infection had fever on the sixth day, which lasted six days and reached 102° three times. Two cases of streptococcus and gonococcus infection also varied. One had a mild course and the other a most severe infection, resulting in death.

These cases show that the gonococcus may be a cause of puerperal infection and may cause severe constitutional disturbance. These findings have been corroborated by Mayer (6) in a study of six cases of such infection and by an investigation of Little (7) into the bacteriology of the recently pregnant uterus. Little found the gonococcus in the lochia in sixteen cases. There were ten cases with a temperature above 100°F.; six cases were in pure culture, two in mixed culture and two doubtful. There were three cases with a rise above 100.6°F.

From this it may be seen that gonococcus infection in the puerperium must not be disregarded. The first course of the infection is not usually acute; but the late manifestations are usually more dangerous and severe. The common cause of gonococcus infection in the puerperium does not, as a rule, show marked constitutional symptoms, but the danger of extension of the disease to the Fallopian tubes is a very grave one. In nine of the seventeen cases such extension was believed to have taken place, as indicated by pain, abdominal rigidity and signs of a mild pelvic infection. In one case this extension was definitely proved by operation.

The disease may extend still further and cause general peritonitis, as is shown by a case reported by the author (8) in which a diffuse peritonitis resulted from gonococcus infection in the puerperium. The organism was recovered from the peritoneum at autopsy.

The character of the lochia in gonococcus infection in the

(6) Mayer, *Mon. f. Geb. u. Gyn.*, 1907.

(7) Little, *Amer. Jour. of Obst.*, Dec., 1906.

(8) McDonald, *Puerperal General Peritonitis*, *Annals of Surgery*, Feb., 1907.

early part of the puerperium remains unchanged, but after the fifth day it becomes more and more purulent, until it is replaced by a purulent discharge. This discharge, resultant from the endometritis, usually persists for some weeks. During this time the gonococcus may be readily isolated.

An interesting fact in connection with this infection is the malnutrition and intestinal disturbances to which the babies of infected mothers are subject. Of fourteen babies three died, and the majority of the others lost weight. These facts in regard to the morbidity of the babies have been confirmed by Lobenstine (9) in fifty cases.

The influence of labor upon a pre-existent gonococcus infection is most marked. The softened tissues and large raw surface of the puerperal uterus offer a splendid culture ground for the organism. It usually extends by mucous membrane, but may penetrate the softened uterine muscle. Extension to the Fallopian tubes is the common result and late disturbances are the rule.

Two cases of the seventeen came to operation for purulent salpingitis and others have not been traced.

The gravity of this infection exists not so much in its prime infection and immediate constitutional disturbances as in the more remote result of tubal and pelvic disease some time after the puerperium. It is a well known fact that streptococcus infection results in slight anatomic alterations of the pelvic organs after recovery from the infection, but the reverse is true of the gonococcus infection where marked alteration of tissue is the rule and spontaneous recovery from pelvic disease from this cause is the exception.

(9) Lobenstine, Bull. of Lying-in-Hosp., 1906.

910 CASES OF KORSOKOW'S SYNDROME WITHOUT POLYNEURITIS
TWO CASES OF KORSOKOW'S SYNDROME WITHOUT
POLYNEURITIS.*

By N. A. PASHAYAN, M. D.,

Schenectady, N. Y.

In 1887 Korsokow¹ described a group of mental symptoms as characteristic of a special psychosis accompanying multiple neuritis. Most of these cases were of alcoholic origin. Three years later he reported an additional number² of cases in which the same symptoms were manifested yet not alcohol but other toxemic conditions were active in the causation of the polyneuritis. An article³ from his pen in the same year gave a full analysis of this affection and the point mostly emphasized was to the effect that polyneuritis is *sine qua non* component of this psychosis, developing as a rule synchronously with it. The only reservation made by him was—"to remember that even cases of similar psychic disorder might occur in which the symptoms of multiple degenerative neuritis may have been ill defined and hence overlooked."⁴

After an initiatory emotional disturbance such as excitement, fear or delirium Korsokow's syndrome presents the following distinct and characteristic features: (a) inability to fix the attention and hence resulting poor grasp of new impressions; (b) mental confusion and disorientation for time and place, especially for time; (c) loss of memory for events transpiring in the recent past; (d) tendency to fill up the gaps created by this retrograde amnesia with pseudo-reminiscences and confabulations.

Since Korsokow published his original observations on this topic, there have been a rather large number of cases reported from various sources corroborating in the main the claims of the author. At present most text books on psychiatry recognize and describe as "Korsokow's psychosis" a distinct mental disorder.

On the other hand several observers, notably Jolly, Wernicke and Kraepelin have contended that Korsokow's syndrome is not characteristic to nor exclusively seen in polyneuritis but obtains in other conditions where neuritis plays no part. E. Meyer and

*These cases were studied during my service on the Staff of the Manhattan State Hospital, New York City, and I am greatly indebted to Dr. William Mabon, the Superintendent, for his kind permission to publish them.

J. Raecke⁵ conjointly reported eight such cases from the clinic at Kiel. The mental picture in all of them was typical of Korsokow's, yet the underlying morbid states were gastric hemorrhage, apoplexy, cerebral tumor, syphilis, puerperium and also general paresis. Kalberlah⁶ reported a similar case following trauma, Meyer⁷ after concussion of the brain, Raecke⁸ following an attempted strangulation, Boedeker⁹ in polyencephalitis superiora hemorrhagica, Boemheld¹⁰ in cerebral lues and von Bonhoeffer¹¹ in epilepsy, senile and arteriosclerotic psychoses and also in atypical cases of dementia paralytica. Wernicke¹² states that polyneuritic psychosis and presbyphrenia may present essentially the same mental picture.

The two cases¹³ here reported were studied with considerable care and as the mental symptom-complexes of both of them were typically characteristic of Korsokow's disease evidences of an active or quiescent polyneuritis were looked for but none were found. They serve to confirm the assertion of the authors that Korsokow's syndrome is a mere syndrome and not distinctive of a special psychosis.

CASE I.

P. M. was admitted to the Manhattan State Hospital on July 13, 1907. No reliable anamnesis could be obtained as to his past life, the mode of onset and the duration of his illness. Physically he was an ill-nourished man in the third decade of life and was suffering with pulmonary tuberculosis. No subjective complaints of headache, vertigo or any sensory disturbances were discovered. The movements of the eye muscles were free in all directions. The pupils were dilated, the left smaller, both reacted promptly to light and distance. No hemianopsia. The sense of smell was dull but the other cranial nerves were intact. The quadriceps, patellar and tendo-Achillis reflexes were greatly exaggerated. The elbow and wrist jerks were quite active. No Babinski. The gait was slightly unsteady with some oscillation in Romberg position; other co-ordinate movements were performed well. No weakness in the extensors of any of the extremities nor any tenderness could be elicited on deep pressure over muscles and nerve trunks. The tongue and fingers were markedly tremulous. His speech was sticky, the words were pronounced with hesitancy and effort; this being more perceptible in enunciating test phrases. The handwriting was irregular, especially in the upstrokes with omission of letters and syllables. The examination of the cerebrospinal fluid revealed lymphocytosis and high tension.

The physical signs clearly were indicative of general paresis and there was no evidence of any polyneuritic disorder. The mental symptom-complex, however, was extremely typical of Korsokow's psychosis. In mood he was affable and gave expression to no delusions or hallucinations.

He was entirely disoriented for time and place and failed to realize his environment, mistaking the identity of those about him. He was unable to retain a name or number one minute later. He recalled the dates of his birth and marriage and was able to calculate small figures. On the other hand his memory for the recent past was a blank and the gaps were filled up with a variety of tales and pseudo-reminiscences, all apparently in good faith. The following notes may be appended for illustration:

Q. "When did you come here?"

A. "I have been here off and on for twenty-five years; it is quite a while; I was merely a kid." (Only two months in hospital.)

Q. "Where were you yesterday?"

A. "I left this place last night to see a friend of mine at 38 Chambers street; we chewed the rag until eleven and then had a pint or two of beer and took a walk around. Too late for hotel I said. When I came here the man who owns the place gave a scolding." (Was confined to bed and not out of the ward.)

Q. "Why did you come here?"

A. "I came here to get away from a pack of crooks——"

Q. "Why did the owner of this place scold you?"

A. "You don't say! When did he scold me?" (Forgotten the statement he made hardly a minute ago.)

CASE 2.

P. H., male, aged 50, born in United States. No hereditary taint. He was healthy as a child and of average intelligence. At the age of eleven he left school and for a short time was employed as decorator. For the last twenty years, however, he was connected with the fire department of New York City. He has been a steady drinker, and seven years previously had an attack of delirium tremens.

The first sign of any mental trouble was noticed in November, 1905. One evening his wife found him comatose and that night he had several convulsions of the grand mal type. No seizures have recurred since. For the following two months he was dull, would sit in one place for hours. At times he failed even to recognize his family. Gradually he improved to such an extent that he was able to resume his duties as a fireman. In April, 1907, he was retired as he became too feeble for active work. At home he became restless, destroyed his clothes, attempted to go into the street naked and was eventually committed to the hospital. The neurological findings in his physical examination are as follows: tremor of tongue, facio-labial muscles and fingers; ptosis of the right eye-lid; swaying in Romberg position and unsteadiness in gait; other co-ordinate movements were performed poorly. There was no weakness of the extensors of any of the extremities nor any tenderness of muscles and nerve trunks. The elbow, wrist, quadriceps, patellar, tendo-Achillis reflexes were all exaggerated. No Babinski. Senses of smell and taste were dull. Pupils were equal but responded to light sluggishly. Speech was slurred and stumbling in enunciating test phrases. So no evidences

were found in his physical examination or history pointing to a past or present attack of multiple neuritis.

Mentally, however, he was dull and confused, did not know the year, month or day, and failed to recognize the nature of the institution. He had marked defect in retaining new impressions and was unable to recall a figure or a name a few minutes later. When questioned about the recent past he related a number of pseudo-reminiscences, contradicted himself repeatedly and failed to recognize the fact when his attention was directed to it. He remembered, on the other hand, important events in his early life and had well retained knowledge acquired in school. As a rule he was quiet and compliant, but inclined to be peevish. At no time false sense-perceptions or delusions could be elicited. The further progress of the case showed that he was suffering with dementia paralytica, while the mental symptom-complex was in all essentials that of the polyneuritic psychosis of Korsokow.

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- 12 WERNICKE. *Grund. d. Psych.*, *Zweite Aufl.*, p. 290.
- 13 DR. BURR, at a meeting of the Philadelphia Neurological Society, February, 1906, questioned the disease entity of Korsokow's psychosis, but the reported cases have mostly been contributed from German clinics.

Clinical and Pathological Notes

Case Reports. (a) Epithelioma of the Larynx: Total Laryngectomy Including the Removal of Part of the Trachea; Death from Pneumonia on the Thirteenth Day. (b) Sarcoma of the Pharynx in a Child of Eight Years, with Autopsy Findings and Microscopical Report. BY CLEMENT F. THEISEN, M. D., ALBANY, N. Y., Clinical Professor in Diseases of the Nose and Throat, Albany Medical College.

Read at the Twenty-fifth Annual Congress of the American Laryngological Association, Washington, D. C., May 7, 8 and 9, 1907.

Case A.—This case is reported, because it emphasizes the point brought out by Delavan in a paper read at a meeting of this association, ("Recent Advances in the Treatment of Malig-

nant Disease of the Larynx," 1904), that early radical operation offers the only reliable prospect of cure in cancer of the larynx. It brings out another point so often raised by Mackenzie in discussions upon this subject, that microscopical diagnosis of cancer of the larynx is often difficult, and that the laryngologist may be misled by the pathologist, and valuable time lost. There is no doubt, however, that the fault is very often the laryngologist's, for not cutting deeply enough into the growth when he removes a piece for microscopical diagnosis. It is well known that a laryngeal growth may not show malignancy on the surface, and still be malignant. This question has been so thoroughly discussed at meetings of this association that I will not go into it any further. I will say, however, that in my own case, it would have been better, and the patient would have had a better chance, if the radical operation had been performed just as soon as the naked eye diagnosis of cancer was made. That diagnosis was made, but when several pieces were removed for microscopical examination, and the report came back that the growth was not malignant, I felt doubtful of my diagnosis, and so lost much valuable time. I have no doubt at all that the removal of pieces of the growth for examination, was probably responsible for the very rapid extension of the disease subsequently.

Mr. F. M., aged fifty-seven years, was referred to me by his physician (Dr. Barnes, of Troy), with the history, that for several months he had been hoarse, but that his general condition had been very good. I first saw him last September. On examination, the nose, nasopharynx, and pharynx showed practically normal conditions. On laryngeal examination, however, a rather flat, somewhat nodular, firm growth, involving about two-thirds of the left vocal cord, was seen. This presented very much the appearance of multiple, small, papillomatous excrescences. The left ventricular band was somewhat reddened and thickened, as was also the mucous membrane in the left arytenoid region. The right cord was slightly reddened, but was smooth and otherwise normal.

On October 3rd, several small pieces of the growth were removed with cutting forceps, and sent to the Bender Laboratory for microscopical examination. The report came back that the growth was not malignant, and was probably of an inflammatory

character. My original clinical diagnosis was carcinoma, but thinking that I must be mistaken, and after talking the matter over with his physician, we decided to use palliative measures for a time. There was no involvement of the cervical lymph nodes so far as could be determined.

The patient was under my observation for a number of weeks after this and improved somewhat. I then did not see him until January 14th of this year. He had been having considerable dyspnea, and was breathing with some difficulty when he came into my office. The growth had extended very much in the interval, involving the whole left cord, extending below the cords, and the right cord also showed evidences of a new growth. The condition now was so clearly malignant and the dyspnea was so great, that I performed tracheotomy, using equal parts of a sterile solution of one per cent. cocaine and one to ten-thousand adrenalin.

This solution I have used in a number of tracheotomies in adults, and it has given uniformly good satisfaction.

I told him that a radical operation still offered him some chance, but it was not until three weeks after the preliminary tracheotomy that he would consent to this. A total laryngectomy was performed in the Samaritan Hospital in Troy, and for a week the patient got on very well.

The method that has been advocated by Gluck, working from above downward, was followed. Because the growth had extended into the upper part of the trachea, the trachea was removed with the larynx for some distance below the site of the preliminary tracheotomy, the severed trachea being stitched to the skin. Chloroform was administered through the tracheotomy tube during the operation. The patient was given no nourishment by the mouth for several days after the operation and for a week got along very well. He then developed a pneumonia and died on the thirteenth day after the operation.

The operation was performed by Dr. J. B. Harvie, of Troy, attending surgeon to the hospital, assisted by Dr. Barnes and the writer.

The pathological report is as follows:

SAMARITAN HOSPITAL, February 9, 1907.

Gross Description.—The specimen consists of a larynx. On its anterior surface just below the thyroid cartilage, a small portion of skin is at-

tached, in the center of which is a sinus communicating with the trachea below the larynx, the result of a tracheotomy. The walls of the sinus are lined with granulation tissue. The inner opening into the trachea is about 1 cm. in diameter, and much larger than the surface opening. By looking into the larynx from above a vegetative growth is found on the vocal cords, particularly on the left side and the cords seem partially fixed. After sectioning the larynx posteriorly in the median line, the left side is found to be almost completely covered with a whitish, minutely nodular, fungoid growth, of firm consistency. The growth extends to the right side also, but involves only the anterior third of the right vocal cord. The central portion of the growth is softened, and somewhat degenerated, the advancing edges are elevated and hard. No regional metastases are found.

Anatomical Diagnosis.—Epithelioma of the larynx.

Microscopic Appearance.—The surface epithelium at the margin of the growth is of normal appearance, its transition into the malignant growth can be definitely demonstrated in the sections. The growth itself is entirely of epithelial origin, and consists of irregular columns or spheres of epithelial cells, growing into the underlying tissue in all directions. The cells are cuboidal or round, of large size with a pale-staining nucleus, and many mitotic figures can be seen. The marginal cells are more closely packed, and resemble in their arrangement the stratum Malpighii in the epidermis. The growth shows a tendency to rapid degeneration in the centres of the columns and spheres, for frequently the cells are replaced by granular detritus. The interstitial connective tissue is thickly infiltrated with small mononuclear leucocytes and plasma cells, and in some areas there is a proliferation of the small capillaries. The hyperplasia of the connective tissue is definite, and has the appearance in places of granulation tissue. No metastases could be found.

Revised Diagnosis.—Epithelioma of the larynx.

H. W. CAREY.

Gluck has had undoubtedly by far the largest experience in total laryngectomy for malignant disease of the larynx, and has had the most successful record, considering the large number of operations he has performed.

Recently Chevalier Jackson (*British Medical Journal*, November 24, 1906), has reported eight total laryngectomies, with no operative mortality. One of his patients lived seven years after the operation, and one case lived three years without recurrence, dying of cerebral hemorrhage. One patient lived eight months, dying of alcoholism. Of the remaining five, three recurred within a year, one apparent cure was lost sight of, and one was too recent to record.

Preliminary tracheotomy seems to be advisable, although Keen, without preliminary tracheotomy, severs the trachea and stitches it to the skin as the first step, after exposing the larynx and

trachea. This method of stitching the trachea to the skin was also successfully employed by Solis-Cohen in his well known case.

In conclusion the writer would say that in his case the delay occasioned by the favorable report of the pathologist was certainly injurious to the patient. An early thyrotomy might have been performed, with a much better chance for the patient. In such doubtful cases, it would seem best to depend upon the naked eye diagnosis of cancer and go ahead with the operation immediately.

The removal of pieces of the growth for microscopical examination is not always wise, because if only small pieces are removed from the surface of the growth, the examination may not show malignancy.

Case B.—A search of the literature of the past twelve years, revealed the fact that sarcoma of the pharynx in young children is rare, so that the writer considered the following case worth placing on record.

A. S., a girl, aged eight years, was referred to the writer on January 11th of this year, with the history that for several months there had been an increasing difficulty in breathing. The child's parents are living and well, and there are five other perfectly healthy children in the family. The child's great grandfather is said to have died of cancer of the throat. The child had lost weight rapidly and was in bad general condition.

Examination of the throat showed the presence of a large mass, including the soft palate, and pushing it forward. The growth extended downward almost to the epiglottis, and apparently into the naso-pharynx, although this could not be examined, as the finger could not be carried around and back of the growth. There was a constant discharge of an offensive muco-purulent material from the left nostril.

The mass was firm to the touch, and did not show any evidence of breaking down. There was some involvement of the glands, particularly of the left side of the neck.

Dr. A. W. Elting, of Albany, saw the case with me, and agreed that the tumor was inoperable. The child was admitted to the Child's Hospital on January 14th, and it was decided to try mixed toxins (erysipelas and bacillus prodigiosus.—Coley's serum), following the method advised by Coley (*Journ. Amer.*

Med. Assoc., March, 1906). A piece of the growth was removed for microscopical examination and sent to the Bender Laboratory, with negative results. Here again, although a fairly large piece was removed, we probably did not go deeply enough to show the malignant character of the growth. Clinically, however, there was no doubt at all about its malignant nature.

The injections of the serum directly into the mass were started a few days later. We started with one-third of a minim increasing one minim or more each time. We got no reaction until January 25th, after the injection of three minims into the mass. The temperature rose to 103.4° F. Pulse, 136. On the following day the temperature was down to 99° F.

There was another reaction (temperature 102° F., pulse 160), after the use of four minims of the serum. On February 3rd, a hemorrhage from the nose and throat, lasting about an hour, occurred, and was controlled with adrenalin and ice.

The amount of the serum was steadily increased, and another reaction (temperature 102.6° F., pulse 140), obtained, when eight minims were injected. Reactions were also obtained when fourteen and sixteen minims were used. The injections were given at first every other day and finally every day, as much as twenty minims being used.

The patient breathed with difficulty during the night of March 4th, and died on the morning of March 5th. Adrenalin injections were not used in this case, because the method is slow, and the child's condition was so bad that we thought prompt results would probably be obtained with the mixed toxins. Iodide of potash had been used without any result, and had to be stopped because it greatly increased the difficulty in breathing, by producing an edema of the mucous membrane.

For a few weeks after the serum injections were started, the child appeared to improve, the breathing being easier, and the growth apparently becoming a little smaller.

On the whole, however, the use of Coley's serum did not do any good. It certainly did not produce the slightest softening of the growth. The autopsy findings were as follows:

THE BENDER HYGIENIC LABORATORY.

Name, Anna S. No. 0-1108. Date, March 6, 1907. Aged, 8 years. Child's Hospital. Service of Dr. Theisen.

Clinical Diagnosis.—Sarcoma of soft palate.

Body is that of a fairly well-built, poorly-nourished female child,

measuring 123 cm. in length. Rigor mortis absent. Pupils unequal, the right being dilated and measuring 5 mm. in diameter; the left contracted and measuring 1.5 m. in diameter. A ptosis of the left upper eyelid is present. The cervical lymph nodes on both sides, but especially on the left, are enlarged and readily palpable.

On exposing the abdominal cavity, the intestines are seen to be distended with gas, the appendix is bent on itself and bound to neighboring tissue by firm fibrous tags. The mesenteric lymph nodes are apparently normal; pleural cavities, normal; pericardium, normal; heart, normal; lungs, normal; liver and gall bladder, normal; spleen, normal; stomach and intestines, normal; kidneys, normal; adrenals, normal; pelvic organs, normal; aorta, normal; neck, the left lateral aspect of the neck downward from the left ear is slightly prominent and some enlarged lymph nodes are felt. The mouth is two-thirds filled, principally on the left side, with a firm, globular growth attached more at the left side of the junction of the soft with the hard palate, which extends from there to the side of the cheek down along the side and back of the pharynx on the left, and is most intimately adherent to the left side of the pharynx, especially to the pterygoid process, and as far down as the gullet. The tongue fills the lower part of the oral cavity and the growth the upper part, both meeting tangentially as two spheroids, make it appear as if the communication with the pharyngeal opening was obliterated, but the obstruction is only apparent, and a finger can be readily introduced between the tongue and tumor into the pharynx.

By incision along the oral attachments of the tumor and by loosening up the pharyngeal attachments, the trachea, larynx, esophagus and tongue can all be removed with the growth.

The tumor consists of a pinkish-white, roughened, irregularly lobulated mass of tissue measuring about 7x4x4.5 centimeters. It involves the entire soft palate, the pillars of the fauces on both sides, the left side of the pharynx from the pharyngeal vault, downward to a level with the epiglottis, the lower and right-hand portion filling in the space above the epiglottis, but being free and unattached in this part, the attachment on the left side supporting the growth.

On section, the surface is homogeneous in appearance with no coarse connective tissue stroma, but apparently very cellular. The tissue is glistening and semi-translucent, of uniform consistency and of an elastic nature. On a level with the upper margin of the thyroid cartilage and to the front of the lateral border of the mass above described is a smaller, but similar mass measuring 3x2.5x2.2 centimeters, probably a group of enlarged cervical lymph nodes.

Anatomical Diagnosis.—Sarcoma of pharynx. Enlargement of cervical lymph nodes. Chronic periappendicitis.

Microscopic Description.—Sections through the tumor show tissue which in most parts is densely cellular. The cells have deeply staining somewhat vesicular, oval or spindle-shaped nuclei with little or no intracellular substance. In places the cells are arranged in fascicles, which cross and interlace and here the structure is less dense than elsewhere. Connective tissue trabeculae penetrate in various portions, and edema of some areas

is present. Blood vessels are abundant and fairly well formed. The enlarged lymph nodes in connection with the tumor do not show an invasion by the growth. A marked hyperplasia of the lymph follicles and lymphoid elements exists.

Microscopic Diagnosis.—Spindle celled sarcoma with hyperplasia of neighboring lymph nodes.

J. O. ROBINSON.

The following case reported by Halsted (*Trans. Amer. Laryngol. Rhinol. and Otol. Soc.*, 1897), was somewhat similar to the writer's:

Emma R., aged two years, was brought to consult him on May 6, 1896. The child's respiration was labored, noisy and rapid, skin of the face of a milky pallor, with marked cyanosis, and the child was only partially conscious of its surroundings.

On examination, the right side of the nose was seen to be occluded by a growth projecting externally. The left nostril was also occluded. The soft palate was pushed forward by a mass presenting itself in the oro-pharynx. There was no ulceration. The child's dyspnea was so great that Halsted performed tracheotomy almost immediately. Twenty-four hours later there was a hemorrhage through the tube. The child took no nourishment and died two days after the operation. A histological examination of the specimen obtained at autopsy showed it to be a sarcoma.

Melville Black (*Colorado Med. Jour.*, April, 1901), has reported a case of papilloma of the soft palate, turning into sarcoma, in a child eleven years old. Two large tumors of the soft palate were removed, which microscopically were reported to be papillomata. There was a recurrence four weeks after the operation, and an examination then showed the tumor to be a round-celled sarcoma. The child died.

Another case of round-celled sarcoma of the pharynx has been reported by Hanszel (*Ber. d. Wiener laryngol. Gesellschaft.*, January 9, 1902), in a child three years old. The author states it developed as a phlegmonous angina.

Schmidt has reported a case of sarcoma of the soft palate in a boy twelve years old. A radical operation was performed, but the final result is not given. (Adolf Schmidt. *Alveolarsarcom des weichen Gaumes. Münch. Med. Wochenschr.*, No. 10, 1894).

A case of fibro-sarcoma of the naso-pharynx has been reported by Mermet (*Soc. Anat.*, Paris, July 14, 1894). A tumor as

large as an egg, probably originating in the inferior turbinate, posteriorly, hung down into the pharynx. It occurred in a girl aged sixteen years.

Another case in a girl of the same age, was observed by Simpson. (*Trans. Amer. Laryngol. Ass.*, 1893). This was a sarcoma of the soft palate, and another example of the degeneration of a benign into a malignant growth. The soft palate was removed. Death resulted eight months after the operation, and over two years after the development of an apparently benign growth.

To consider briefly now the result of the treatment of sarcoma of the pharynx in children, the outlook, judging by the reported cases, is not very promising.

W. B. Johnson, however, (*N. Y. Med. Record*, 1894), has reported a case of sarcoma of the palate successfully treated with the toxine of erysipelas. The patient, a girl sixteen years of age, had a sarcoma involving the soft palate, posterior wall of the pharynx and epiglottis. The mixed toxins were used and after nine months treatment, great improvement resulted. The growth "nearly" disappeared.

Hanszel (*Monatschr. f. Ohrenh.*, No. 19, 1902), also reports a case of improvement in a sarcoma of the pharynx as the result of a streptococcus and staphylococcus infection.

Sarcoma of the pharynx in adults will not be considered in the writer's paper.

Emerson has recently reported a case in an adult, in which the use of Coley's toxines resulted in the practical disappearance of the growth. There was a recurrence and death after seventeen months. (*The Laryngoscope*, March, 1907).

There are also several cases on record in which the arsenic treatment resulted in some improvement. I could not find any record of its having been used in sarcoma of the pharynx in children.

Editorial

I had heard that very voice ere this, and compulsory observation had forced on me a theory as to what it boded. Three times in the course of my life events had taught me that these strange accents in the storm—this restless, hopeless cry—denote a coming state of the atmosphere unpropitious to life. Epidemic diseases, I believed, were often heralded by a gasping, sobbing, tormented, long-lamenting east wind. Hence, I inferred, arose the legend of the banshee. I fancied, too, I had noticed—but was not philosopher enough to know whether there was any connection between the circumstances—that we often at the same time hear of disturbed volcanic action in distant parts of the world, of rivers suddenly rushing above their banks, and of strange high tides flowing furiously in on low sea-coasts. "Our globe," I had said to myself, "seems at such periods torn and disordered; the feeble amongst us wither in her distempered breath, rushing hot from steaming volcanoes."

CHARLOTTE BRONTË.

Villette.



The Seventh Conference of Sanitary Officers

During the last seven years the health officers of the State of New York have assembled in an annual conference in one of the larger cities and have perfected an organization under the administration of the State Department of Health. On October 16, 17 and 18, the Conference of 1907 was held at Buffalo, and gave evidence of great activity and of detailed cooperation which promises well for reforms in the care of the public health. Dr. Eugene H. Porter, State Commissioner in Health, opened the Conference with the annual address, reviewing the work of the year and outlining the opportunities for the future. It is worthy of note that the audience comprised the largest gathering of health officers ever held in any State of the Union.

The Special Department Work already accomplished includes:

1. The Investigation of Summer Resorts. The work of prevention of "vacation typhoid" has been begun by an inquiry into the sanitary condition of summer hotels and boarding houses.
2. Sanitary Investigations of Various Cities. This work includes the study of the water supply, and all possible sources of

contamination; the methods of sewage disposal; and a general inquiry into industrial and tenement-house conditions.

3. The pollution of streams, the conditions of all public water supplies and sewage disposal plants, and the analysis of food stuffs have been made the subjects of special inquiry, and exhaustive work in these lines is expected to be accomplished.

4. The examination of the eyes and ears of school children has been considered, and this autumn a plan has been put in operation in 450 high schools of the state.

5. Tuberculosis receives special attention. The Department of Health has instituted a tuberculosis exhibition; which is sent from city to city and is most effective in disseminating practical knowledge of the affection. For the campaign against tuberculosis Dr. Porter proposes the following steps:

"1. *Notification and Registration.* Without notification it is apparent that any real progress is rendered impossible. You cannot give aid to any consumptive until you know where he is, nor can it be known what help he requires until the case is properly reported and the conditions are described. Every physician in the State should promptly notify his health officer of any case of tuberculosis occurring in his practice, using for that purpose the cards and blanks already provided by the Department. The health officer in turn reports all cases to the Department. There is no publicity and all such returns are strictly confidential communications. This step was begun on January 1 of this year, and while the registration of cases has been fairly good, the step is as yet only half taken. To have it entirely satisfactory we must have the active and cordial support of the profession at large and more systematic work from some of our health officers.

"2. *The Establishment of District Stations.* The medical officers of the Department have been for some little time so selected that it is now possible to divide the State into districts, each one having within its boundaries at least one medical officer.

"At some central point in this district a station may be established in charge of the medical officer and should contain a supply of diphtheria and tetanus antitoxin, a bacteriological outfit, report cards and blanks, and a full supply of all the circulars and pamphlets issued by the Department on tuberculosis. The station would also contain outfits for the collection of sputum in order

to facilitate an early and definite diagnosis. The station and its contents would be an educational center. The circulars would be for both physicians and the laity and their distribution would be made by the medical officer and the health officers in the district. The circulars would be sent to the press and would undoubtedly be published. Addresses by health officers before medical societies and popular audiences, organizations of sanitary societies, the Sanitary Institutes of the Department and the use in larger towns of our tuberculosis exhibit, would all prove powerful and effectual factors in the fight against the Great White Plague.

"In this campaign of education the Department will endeavor, acting with the health officers, health boards and public-spirited citizens, to organize anti-tuberculosis societies whose local influence and aid would be invaluable. For it must be steadily borne in mind that the greatest single factor in the winning of this battle is the constant and persistent dissemination of practical knowledge of the disease, its dangers and how to successfully combat it.

"Provision should be made not only for a permissive co-operation between the County and the State Laboratories, but the County Laboratory should be introduced into the public health service on somewhat the same legal basis as now applies to the relation between the local and the state health departments.

"To this end I believe a bill should be introduced into the Legislature during the coming session, permitting the establishment of hygienic laboratories by counties or groups of counties, and for a proper relation to the State Hygienic Laboratory and the State Department of Health.

"3. *State Camps for Consumptives.* And now what care should the State give to the thousands of cases of incipient tuberculosis needing help?

"If any care is to be exercised it is plain that it must be as simple and inexpensive as possible; otherwise the cost of caring for those people would be prohibitive. But we must always remember that we pay for them anyway. Whether we provide proper care or send them to almshouses and charity hospitals and thence to Potter's field, the expense is always ours. Remember, also, that every case removed to a suitable environment ceases to be a source of infection to his family, to his neighbors and the people in the streets.

"I would advocate, therefore, the establishment of State camps for consumptives on State land. Plain board cabins should be erected, fashioned after sanitary plans. A little simple furniture should be provided. The inmates should be required to furnish, when able, all other furniture necessary. Such camps should have a resident physician and patients admitted only after proper and competent examination.

"The results attained by such camps in other states and indeed in our own, have been most surprisingly gratifying and the percentage of cases can not be exceeded. I do not forget the very admirable Raybrook Hospital and the fine results reached there; but the State can not, it seems to me, commend itself to the policy of erecting such expensive buildings and demanding large allowances for maintenance. The number of consumptives seems to be too great to carry out such a plan, admirable though it may be.

"I believe that State camps instituted somewhat as outlined would produce the maximum of results at the minimum of expense.

"4. *Local Hospitals.* There still remain for our consideration the chronic, the hopeless cases of tuberculosis. What shall be done with them? Should the State go as far as I have suggested, it would very probably deem it well to stop there, at least for the present.

Nor ought the State to do all of this work. The cities and towns if this State have responsibilities and duties which they too must recognize. It must be their part to care for the chronic cases of tuberculosis. Just how this should be done is a matter for determination by the local authorities."

Tuberculosis was also the topic of a symposium in which Professor Veranus A. Moore read a paper on "The Dissemination and Control of Tuberculosis as Illustrated in the Bovine Species;" Dr. John H. Pryor, one on the "Early Diagnosis and Treatment of Tuberculosis;" and Professor Edward Devine addressed the Conference on the "Social Aspects of Tuberculosis."

Dr. John T. Wheeler presented a paper on "Practical Points on Quarantine;" Dr. H. E. Schmid one on "The Detection of Communicable Diseases," Dr. Harlan P. Cole discussed "Physical Defects in School Children," and Dr. Herbert D. Schenck referred to "Defects of the Eye, Ear, Nose and Throat in School Children." Drs. Thomas Darlington of New York.

Ernest Wende and Henry R. Hopkins of Buffalo, and George W. Goler, of Rochester, presented the various phases of the milk problem.

The scheme of co-operation between the State and local health boards appears justified by the practical character of the conference and by the evidence given of systematic organization in the various executive departments. The State may well consider the need of encouraging this work and thus centralizing the administration of all the energies which go for the prevention of disease. There is too much speculation and too little co-ordinated effort upon such problems as water contamination, sewage disposal, and the hygiene of large cities and schools.

Little Biographies

XXIII. CASSERIUS.

CASSERIUS (JULIUS) as eminent Italian physician and anatomist was born at Piacenza, in 1557. Though of humble parentage, he was possessed of great talent.

His genius leading him to the study of anatomy, he went to Padua and became a servant to Fabricius who made him his pupil and assistant and finally coadjutor in the professorship of anatomy in the university. He filled this office with credit until his death, which occurred in 1616. His diligence and industry equalling his genius, he became in a few years more widely known than his preceptor.

Fabricius, who was advanced in years, expected that his pupil would take up the work in which both were so much interested, but in this he was disappointed, as he lived three years longer than Casserius. Casserius had an ambition to leave behind him a name. Practically the entire revenue obtained by teaching anatomy was expended in procuring subjects for dissection and in paying draughtsmen and engravers to delineate figures of such parts of the body as he discovered or thought he had a better conception of than his predecessors. In the preface to his anatomical works he affirms that he furnished future anatomists with delineations of the parts of human and animal bodies, exceeding in elegance, perspicuity and correctness, all that had preceded them.

His first work, published in 1600, was "De Vocis Auditusque Organis Historia Anatomica, &c."

He laid claim to the discovery of a muscle moving the malleus, one of the ossiculæ auditi, and his name was recognized in the term "perforated muscle of Casserio," by which at one time the coraco-brachialis muscle was designated. The Gasserian ganglion (Johann Laurentius Gasser, eighteenth century) is also known as the Casserian ganglion.

He also gave a more accurate description of the larynx than had been presented.

His treatise on the anatomy and physiology of the senses has been several times reprinted.

EDWIN FORREST SIBLEY.

Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR SEPTEMBER, 1907.

Deaths.

	1902	1903	1904	1905	1906	1907
Consumption	16	18	14	22	9	11
Typhoid fever.....	2	1	3	1	0	0
Scarlet fever.....	0	2	0	0	1	0
Measles	0	0	0	1	0	0
Whooping-cough	1	0	0	1	1	2
Diphtheria and croup.....	1	1	0	0	5	4
Grippe	1	1	0	0	5	0
Diarrheal diseases	9	3	9	13	5	8
Pneumonia	6	6	5	3	8	9
Broncho-pneumonia	1	0	0	2	0	3
Bright's disease.....	11	7	16	19	11	16
Apoplexy	3	6	9	10	5	2
Cancer	4	12	7	7	7	9
Accidents and Violence...	8	5	5	8	11	4
Seventy years and over...	14	26	18	28	25	25
One year and under.....	19	19	19	23	20	23
Total deaths	119	139	123	165	135	140
Death rate	14.47	16.90	14.96	20.06	16.51	17.02
Death rate less non-residents	13.62	15.81	12.89	17.75	13.74	15.07

Deaths in Institutions.

	1902		1903		1904		1905		1906		1907	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital.....	3	4	15	6	6	9	11	6	5	15	9	9
Albany County Jail.....	0	0	0	0	0	0	0	0	0	0	1	0
Albany Orphan Asylum..	0	0	1	0	0	0	0	1	0	0	1	0
County House.....	3	2	3	0	1	2	3	1	2	1	3	1
Homeopathic Hospital...	1	1	1	1	1	1	2	1	0	2	4	0
Hospital for Incurables..	0	0	1	0	0	1	2	0	0	0	0	0
House of Good Shepherd.	0	0	0	0	0	0	0	0	0	0	0	0
Home for the Friendless.	0	0	1	0	0	0	0	0	0	0	0	0
Little Sisters of the Poor.	0	0	2	0	0	0	7	2	3	2	3	0
Public places.....	0	0	0	2	1	2	0	3	0	0	1	1
St. Frances De Sayles Orphan Asylum	0	0	3	0	0	0	0	0	0	0	0	0
St. Margaret's House....	4	0	4	0	1	0	2	2	2	1	3	1
St. Peter's Hospital.....	4	0	2	0	2	2	3	4	1	4	4	2
Dominican Convent	0	0	0	0	2	0	1	0	0	0	0	0
Fifth Precinct	0	0	0	0	0	0	1	0	0	0	0	0
Births											96	
Premature births											2	
Still births											6	
Marriages											69	

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation there were one hundred and forty-eight inspections made, of which eighty-six were old buildings and sixty-two were new buildings. There were forty-eight iron drains laid, seventeen connections to street sewers, nineteen tile drains laid, one urinal, thirty-nine cesspools, seventy-one wash basins, fifty-seven sinks, sixty-eight bath tubs, forty-eight wash trays, six butler's pantry sinks, nine trap hoppers in yard, one hundred and sixteen tank closets, one slop hopper, and six shower baths. There were one hundred and twenty permits issued, of which eighty-six were for plumbing and thirty four for building purposes. There were twenty-seven plans submitted, of which six were of old buildings and twenty-one of new buildings. Seven houses were tested on complaint with peppermint and there were nineteen water tests made. One hundred and thirty-nine houses were examined on complaint and fifteen were re-examined. Thirty-five complaints were found to be valid and one hundred and four without cause. There was one violation.

BUREAU OF CONTAGIOUS DISEASES.

Cases Reported.

	1902	1903	1904	1905	1906	1907
Typhoid fever	8	11	19	18	15	11
Scarlet fever	1	11	1	6	7	2
Diphtheria and croup.....	33	21	9	7	20	50
Chickenpox	2	1	3	1	0	2
Measles	0	4	1	1	0	2
Whooping-cough	0	1	2	1	3	0
Consumption	0	1	0	0	0	23
Totals	44	50	35	34	45	90

Contagious Disease in Relation to Public Schools.

	REPORTED			DEATHS	
	D.	S. F.	D.	S.	F.
Public School No. 1.....	3				
Public School No. 7.....	1				
Public School No. 13.....	1			1	
Public School No. 14.....	1				
Public School No. 15.....	9			1	
Public School No. 17.....	1				
Public School No. 22.....	1				
St. John's Academy.....	3				
St. Joseph's Academy.....	2				
St. Mary's Academy.....	1				

Number of days quarantine for diphtheria:

Longest..... 44 Shortest..... 4 Average..... 17 7-24

Number of days quarantine for scarlet fever:

Longest..... 29 Shortest..... 19 Average..... 24

Fumigations:

Houses..... 35 Rooms..... 70

Cases of diphtheria reported..... 50

Cases of diphtheria in which antitoxin was used..... 48

Cases in which antitoxin was not used..... 2

Deaths after use of antitoxin..... 4

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906	1907
Initial positive	29	9	4	2	4	29
Initial negative	21	13	19	20	16	15
Release positive	10	4	6	1	6	13
Release negative	10	11	7	8	16	67
Failed	4	2	0	0	7	8
Total	74	39	36	31	49	132

Test of sputum for tuberculosis :

Initial positive	5
Initial negative	5

MISCELLANEOUS.

Inspections of mercantile establishments.....	0
Mercantile certificates issued to children.....	40
Factory certificates issued to children.....	22
Children's birth records on file.....	62
Number of written complaints of nuisances.....	68
Privy vaults	13
Plumbing ..	12
Other miscellaneous complaints.....	43
Total number of dead animals removed.....	706
Cases assigned to health physicians.....	49
Calls made	166

BUREAU OF MARKETS AND MILK.

Meat condemned	25lbs.
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Current Medical Literature

REVIEWS AND NOTICES OF BOOKS

The Essentials of Histology, Descriptive and Practical. For the use of Students. By EDWARD A. SCHAFER, F. R. S., Professor of Physiology in University College, London. New (7th) edition, revised and enlarged. Octavo, 507 pages, with 552 illustrations. Cloth, \$3.50, net. Lea Brothers & Co., Philadelphia and New York, 1907.

It is an excellent commentary on this work to direct attention to the fact that it is now in its seventh edition. The present edition has been considerably enlarged, both by additions to the text and the introduction of many new illustrations derived from many sources. A new feature is the printing of many of the illustrations in color, which gives a better idea of the appearance of the stained preparations.

The book is divided into fifty lessons, each of which is intended to occupy from one to three hours, so that the teaching of histology is facilitated considerably. The work partakes more of the nature of a good laboratory guide than a class text-book, although it is well suited for either

GEORGE E. BEILBY.

Plaster of Paris and How to Use It. By MARTIN W. WARE, M. D., Adjunct Attending Surgeon, Mount Sinai Hospital; Surgeon to the Good Samaritan Dispensary; Instructor in Surgery, New York Post Graduate Medical School. 12mo; 72 illustrations, about 100 pages. Surgery Pub. Co., 92 William street, New York City. Cloth, \$1.00.

This little book treats somewhat briefly of the technic of plaster work and of its most common uses in surgical conditions. There are seven chapters. The first is devoted to a description of the manufacture of the plaster of Paris bandage, together with some general considerations in regard to its application and removal. In chapters two, three and four are considered the use of plaster of Paris in fracture work and the treatment of some of the most common fractures is here taken up in detail. Chapter five deals with the various forms of the molded plaster of Paris splint and the technic of their construction. In chapter six the use of the plaster jacket in orthopedic surgery is discussed rather briefly and the various forms described. The use of plaster of Paris in dental surgery is considered in the last chapter. While this book presents nothing that is new in the use of plaster of Paris, it is a useful collection of facts which would be found valuable to the student or practitioner unfamiliar with the technic and adaptation of plaster work.

GEORGE E. BEILBY.

Diseases of the Rectum, Their Consequences and Non-Surgical Treatment. By W. C. BRINKERHOFF, M. D., Chicago. Cloth; pp. 207; price, \$2.00. The Orban Publishing Co., Chicago, 1907.

This book is simply an exposition by the author of his so-called Injection Method of Treatment for Haemorrhoids. It comprises mainly a report of cases and testimonials of the remarkable efficiency of this method and incidentally condemns all other forms of treatment. He carefully conceals the formula of his injection fluid and therefore strongly savors of quackery. For egotistical utterances this book is perhaps unequalled. It presents, however, nothing of scientific interest and has no place in medical literature.

GEORGE E. BEILBY.

The Practical Medicine Series, comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the general editorial charge of GUSTAVUS P. HEAD, M. D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. *Volume II, General Surgery.* Edited by JOHN B. MURPHY, A.M., M. D., LL. D., Professor of Surgery in Rush Medical College. Series 1907. pp. 608. Chicago. The New Year Book Publishers.

The rapid advancement in surgical knowledge and the great mass of literature which appears from year to year makes comprehensive reviews of this sort extremely valuable. The author of this work has carefully

selected the best from the year's publications and reviewed them in an instructive and interesting way. His discussions cover very thoroughly the field of surgery, and reflect the remarkable progress and advancement in the surgical knowledge during the year. This volume is of great value and is highly recommended.

GEORGE E. BEILBY.

A Laboratory Manual of Invertebrate Zoology. By GILMAN A. DREW, Ph. D., Professor of Biology at the University of Maine; in charge of Zoological Instruction at the Marine Biological Laboratory, Woods Holl, Mass. With the aid of members of the Zoological Staff of Instructors at the Marine Biological Laboratory, Woods Holl, Mass. 12mo of 201 pages. Philadelphia and London. W. B. Saunders Company, 1907. Cloth, \$1.25 net.

This manual of 200 pages (12mo.) has for its basis the laboratory directions prepared by the instructors in general zoology at the Marine Biological Laboratory of Woods Holl, and used by them, with minor changes, for the past six years. The subject matter is logically and systematically arranged and pertinent statements and queries bring prominently the more important points to the student's attention. Prof. Drew has had two subjects in view: First, to give the student a working knowledge of comparative anatomy and secondly, to impress upon him an appreciation of adaptation as well. Although it is intended for students of zoology, it would appear to be an excellent aid to physicians or others who occasionally venture into the domain of invertebrate zoology.

NEW YORK STATE MEDICAL LIBRARY

Edited by Miss Ada Bunnell, B. L. S.

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Recent Accessions to the Library

American Medical Directory. v. 1. A Register of Legally Qualified Physicians of the United States and Canada. Chicago, Ill., 1906.

Adami, J. G. Inflammation; an Introduction to the Study of Pathology. London, 1907.

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Scottish Medical and Surgical Journal. Edinburgh.

Skandinavisches Archiv für Physiologie. Leipzig.

Zeitschrift für Medizinische Elektrologie und Röntgenkunde. Leipzig.

MATERIA MEDICA AND THERAPEUTICS

Edited by Spencer L. Dawes, M. D.

*The Treatment of Bronchiectasis.*ARNOLD CHAPLIN. *The Practitioner*, December, 1906.

In order to understand the principles of treatment of this disease it will be necessary to state the dangers to which the bronchiectatic patient is exposed. While at first the health is fairly well maintained, sooner or later, symptoms of constitutional disturbance make their appearance, such as wasting and hectic temperature. When these take place, they constitute a danger to life. We rarely find these disturbances in the chronic type without fetor of the sputum, which almost invariably occurs at some time during the course of the disease. This fetor is met with in its gravest form toward the end of the complaint. The transient attacks may pass off quickly or the fetor may be confirmed and never pass away without treatment.

Fetid expectorations, therefore, should be the one symptom kept constantly in mind, for when present it may be a sign that life is in danger. In almost every case in which a fatal termination has been observed, fetid expectoration has been the starting point of the course downward. Coincident with its appearance is a loss of appetite, a longer interval between the expulsion of the sputum, an acceleration of the pulse, a temperature of a mildly hectic type, and a loss of weight and strength. The patient then falls into a typhoid condition and dies of septic absorption, or some form of pulmonary inflammation. In some cases death may be caused by hemoptysis or abscess of the brain.

Our aim then should be to adopt methods of treatment that will ward off the onset of fetid expectoration. The fetor being due to bacterial agency, in which stagnation of the contents of the cavities assists the process, the treatment resolves itself into preventing the undue accumulation of sputa in the lifeless and non-resilient tubes, or of rendering the contents of the bronchi aseptic. To empty the cavities, three methods are usually employed: 1. The method of posture. 2. The agency of drugs. 3. The help of surgery.

Posture.—Ewart has laid great stress on this form of treatment and there can be no doubt of its benefit, therefore it should be put in practice in all cases. The foot of the bed should be raised six inches, only one pillow should be allowed, and the patient should be encouraged to lean over the side of the bed in the morning, and while in that position make an attempt to expel the contents of the tubes.

Drugs.—While emetics are used and stimulating expectorants are constantly employed, it must be confessed that they exert but little influence on the case.

Surgery.—In the past, operations for opening the cavities were much in vogue, but experience has shown that but little good, and often much harm results.

Methods of rendering the contents of the cavities aseptic.—Dr. Poore

recommends the treatment of the fetor by garlic, and inhalations of thymol, eucalyptus, and other similar essential oils have been tried but with no lasting benefit. Grainger Stewart's intra-tracheal injections have given good results but a serious objection to this method is the manual dexterity required.

The inhalation of creosote vapor.—The writer first advocated this method eleven years ago, it having been brought to his notice by a patient who obtained great relief soon after he obtained employment in some large creosote works where he constantly inhaled a strong vapor of that drug. He has since used the inhalation method in all cases coming under his care and with marked success. An essential to the success of this method is perseverance until the patient has become accustomed to the somewhat trying conditions accompanying its use. No improvement need be expected until the patient has had a daily sitting, lasting from a half an hour to one hour for a week or two.

Experience has taught that the following is the best method for carrying out the treatment. The room should be small, not more than seven or eight feet square, and as air-tight as possible, allowing at the same time for the ingress of a little fresh air. The creosote should be placed in a fairly deep enamel dish and this arranged over a tripod and spirit lamp. The common commercial creosote, five or six ounces may be used. Before the patient enters the room, have the lamp lighted and the room fairly filled with the thick vapor. The lamp should not be too high on account of danger of boiling over and taking fire of the creosote. The eyes should be protected with watch crystals rimmed with adhesive plaster and the nostrils plugged with cotton. The first sitting should be for twenty minutes and each one increased a little until each sitting occupies an hour and the room is so densely filled with vapor that it is difficult to distinguish objects. After a week or two the appetite returns, the wasting stops, and the temperature falls, and while often the amount of the expectoration is not appreciably diminished, the fetor disappears. While this treatment does not offer a prospect of a cure, it removes the most dangerous symptom and gives great relief. This treatment may be carried out with perfect propriety in all cases, and out of more than a hundred so treated by Chaplin, only three cases have failed to be improved, while in the majority of cases, very considerable benefit has resulted, the fetor ceasing, and in many not returning for a long time, and then to be quickly removed by further sittings.

The Nature and Treatment of Spasmodic Bronchial Asthma.

G. S. HAYNES. *The Practitioner*, October, 1906.

Many theories have been advanced to account for this distressing condition but it is only within recent years that the true nature of spasmodic bronchial asthma has been clearly demonstrated. Osler's classification of these theories is as follows:

1. That it is due to a spasm of the bronchial muscles.

2. That it is caused by a swelling of the bronchial mucous membrane.
 - (a) Fluctionary hyperaemia (Traube).
 - (b) Vaso-motor turgescence (Weber).
 - (c) Diffuse hyperaemic swelling (Clark).
3. That in many cases it is a special form of inflammation of the bronchioles, bronchiolitis exudativa (Curschmann).
4. That it is due to a reflex spasm of the inspiratory muscles, especially the diaphragm.

In addition, Haig considers it to be due to "collaemia," an excess of uric acid in the blood, giving rise to capillary obstruction, and a rise in intra-thoracic blood pressure; while other writers have suggested an atelectasis pulmonum as a frequent cause.

The seizures of bronchial asthma may be compared with those of the other paroxysmal neuroses, migraine and epilepsy. They occur most frequently in neurotic people, and the consequent instability, or irritability of the respiratory center is an important factor in their production. This type of dyspnea is only compatible with a sudden diminution in the caliber of the smaller bronchioles, and this again can only be caused by contraction of the muscular coat, by turgescence of the vascular system, or by swelling of the mucous membrane with exudation into the lumen of the tubes. Of these, the first is undoubtedly the cause of true spasmodic asthma; the second, which is chiefly supported by analogy from the sudden swelling of the nasal mucosa in cases of so-called "hay-asthma," may be dismissed on anatomical grounds, for there is no such erectile tissue in the walls of the bronchioles, nor does the blood supply render it at all probable that a sudden turgescence could obtain sufficient to give rise to such symptoms. The physical signs are altogether against the presence of an exudation in such quantity as to cause obstruction.

Professors Brodie and Dixon have proved that spasm of the bronchioles can be produced in the laboratory by stimulation of the vagus. Clinically this vagal stimulation may be central, peripheral, or reflex, and investigation leads us to believe that this nervous center is organically intact, but functionally impaired. The strong probability is that the exciting cause is always peripheral, and the constriction of the bronchioles reflex. Clinical experience supports this theory as well. In short, combining clinical experience with experimental evidence, it is practically certain that the true nature of spasmodic asthma is a reflex contraction of the muscle-fibres of the bronchioles, the predisposing cause being a deficiency in the stability of the respiratory center, and the exciting cause a peripheral stimulation, which may be gastric, intestinal, cardiac, renal, nasal or bronchial, or may arise in any sensory organ, and is often of the mildest description. Francis believes, that in the asthmatic state, there exists a morbid connection between the nose and the respiratory center, whereby the center is maintained in such an unstable condition as to allow peripheral irritation to promote an asthmatic index.

Having arrived at a definite conclusion as to the pathology of the condition, the treatment resolves itself into permanently increasing the stability of the respiratory center, and temporarily causing relaxation of the constricting bronchiole muscles during an attack.

It is of first importance to improve the general condition. The climate should be chosen to suit the patient, some being better in dry and some in humid climes; some on hills, others in the lowlands; some again in cities, and others in the country. As a rule, the sea-shore and damp soils should be avoided, and a warm sheltered situation selected. Bath treatment seems to have rather an injurious effect than otherwise. A properly regulated diet is essential; small meals at regular intervals, with but little meat, are often beneficial, while a late evening meal must be strictly avoided. Gaseous beverages should be avoided, but there is no objection to alcohol in moderate quantities, or at meal-times. Regular, out of door exercise is essential, avoiding fatigue. Arsenic, strychnine and the bromides are of service to lessen the instability of the respiratory center. Potassium iodide, lobelia, stramonium or belladonna, once daily have been found, empirically to lessen the paroxysms. Digestive troubles must be corrected and a daily action of the bowels maintained. As a prophylactic, cauterisation of the nasal mucous membrane should be performed.

Immediate relief of the paroxysm may be had by the use of emetics, cathartics, enemas, sprays of cocaine, inhalation of chloroform, ether or amyl nitrite, the direct application of atropine and the nitrites or the inhalation of the fumes of the burning leaves of belladonna, stramonium, hyoscyamus, or blotting paper soaked in potassic nitrate. Atropine sulphate may be injected hypodermatically. Of drugs acting centrally, morphine is pre-eminent, rarely failing to give relief but can not be entrusted to the patient. Paraldehyde is valuable and does not depress the heart. Phenacetine, antipyrine, caffeine or hot brandy and water may give relief. Adrenalin has been said to give relief, when ten minims of the 1:1000 solution of chloride are injected hypodermatically. Its indiscriminate administration is not to be recommended.

The Treatment of Some of the Forms of Gout.

ARTHUR P. LUFF. *The Practitioner*, February, 1907.

Not only in the medical world has an unmerited importance been attached to uric acid as a factor in the causation of disease, but unfortunately, among a considerable section of the public, there has arisen a fetichism of uric acid, which has been pandered to and fostered by the proprietors of the various quack remedies that are so persistently advertised as being capable of dissolving or removing the uric acid from the system. The time has come to clearly recognize that uric acid possesses no toxic properties worth speaking of. The joint manifestations of gout are dependent upon much more general, and much larger conditions than a mere excess of uric acid in the blood. The deposition of sodium-biurate is merely the sign of the disease, not the essence of it, quite comparable with the sugar in diabetes. The contention that meat is poisonous to the human body, on account of the uric acid it contains, or produces, is preposterous, in view of the facts that many races have maintained robust health on such a diet. If meat is the poison which a

certain class of enthusiasts and fanatics maintains it to be, the English nation should have ceased to exist, long ere this.

The treatment of gout should have for its aim: 1. The treatment of the paroxysm in acute gout and the speedy relief of pain. 2. The treatment of the subacute, or chronic condition, and the prevention of recurrence. 3. The treatment of the affected joints, with the object of removing deposits and preventing deformity; and 4. The treatment of irregular gout.

In the treatment of acute gout, intestinal fermentation should be checked, catarrh of the intestine relieved and excessive numbers of bacteria removed by four grains of calomel followed by a saline and for the first twenty-four hours no food should be taken, but water should be drunk freely. The limb should be placed in a horizontal position or slightly elevated above the level of the body, and covered with a cradle. Warm packs of cotton wool, saturated in a soothing lotion should be arranged around it. The following is a satisfactory lotion:

R. Sodii Carb.....	12.000 Gm.
Linimenti Belladonnae.....	60.00 Cc.
Tinctur. Opii.....	60.00 Cc.
Aquae.	ad 240.00 Cc.

The lotion should be mixed with an equal quantity of hot water, poured on the cotton wool and the pack should be changed every four hours. For internal treatment colchicum is the most satisfactory drug. At the beginning a large dose should be used, thirty to forty minims of the wine, followed by a mixture containing in each dose fifteen to twenty minims of the wine and forty to sixty grains of citrate of potassium, the latter drug being valuable on account of its diuretic properties. When the inflammation subsides, the dose of colchicum should be gradually diminished to the vanishing point. A satisfactory method is by means of a pill containing colchicine, nux vomica, hyoscyamus and gentian. For the constipation following the initial purge the following pill, given at night is valuable:

R. Leptandrin	0.065 Gm.
Iridin	0.065 Gm.
Ext. Hyoscyami	0.065 Gm.
Ext. Colocynthis Co.....	0.095 Gm.

If the pain prevents sleep, veronal, trional, or extract of hyoscyamus may be given and opiates avoided.

In the treatment of subacute or chronic gout, small doses of colchicum combined with from three-tenths grams to six-tenths grams of guaiacum resin, the latter for its effect on the portal circulation should be given, the dose of the latter being increased or diminished in proportion to its effect on the bowels. Citrate or bicarbonate of potassium should be given as a diuretic, the dose being pushed until a slight alkalinity of the urine is produced, the citrate being preferable. Where there is a sluggish action of the liver and a gastrointestinal catarrh, mineral waters containing sodium salts are useful, while the much vaunted lithia salts are of but

little advantage and their continued use may produce profound cardiac depression. For the enlargement and thickening of the joints and the neuralgic pains incident to them, iodide of potassium in fairly large doses is valuable.

Local treatment.—If much swelling persists, the limb should be elevated and a light flannel bandage applied. For the edema, a hot douche followed by cold sponging with a strong salt solution, or the Scotch douche are valuable. Immediately following this, massage should be employed. Much benefit may be derived from a salt pack at night. The most efficient agent for the removal of the edema is galvanism associated with massage.

In irregular gout the dyspepsia is most effectually combated by taka-diastase and the hyperchloxydia and its train of disturbing symptoms by cutting off proteid articles of diet and the administration of magnesium peroxide to neutralize the excess of acid. It is a tasteless powder, best given in milk, *t. i. d.*, in doses of from one gram to two grams, as the condition of the bowels will allow. This drug also serves to allay the gouty pruritus. The hepatic torpor is helped most by an occasional "blue pill" or calomel and a saline, preferably Epsom or Carlsbad salts. The gouty eczema is helped by the treatment above outlined and the prohibition of alcohol. The dry form of eczema is soothed by a lotion containing liq. plumb. subacetat., liquor carbonis detergens, and aqua sambuci, especially when followed by a simple dusting powder. In moist forms some preparation of opium should replace the tar. A carbolic acid lotion will relieve the pruritus. Chronic eczema is much benefited by sulphur baths. Strawberries, gooseberries, apples, pineapples and rhubarb should be excluded from the dietary. The frequent insomnia of gouty subjects is frequently due to high arterial tension, associated with accentuation of the second aortic sound and a slight degree of albuminuria. Here again use "blue pill" or calomel and bromide of ammonium as a sedative, carefully avoiding the ordinary hypnotic drugs.

Dietetic treatment.—An ideal diet is one which will supply the true needs of the body, which will maintain the highest degree of physical and mental activity, and which will not disturb the nitrogen equilibrium, and Chittenden's experiments show that it is quite possible to maintain body weight and keep up nitrogen equilibrium on from thirty-four grams to fifty-six grams of proteid matter per day.

On the whole, it may be stated, that animal food, such as fish, chicken, game and meat is best suited to a majority of cases, whilst farinaceous foods are most likely to disagree. The white meats are more digestible than the red. The quantity of meat should be limited, especially where a light-colored urine with a low specific gravity shows that the kidneys are performing their functions imperfectly. Vegetable foods in fair proportion should be taken with at least two meals each day, the choice of vegetables depending upon the digestive capacity of the patient, as a rule, however, excepting the potato, those growing above the ground being preferable. Especial attention should be given to having the diet a simple one, each meal being made up of but a few articles, and a cardinal rule should be moderation in both eating and drinking.

PHYSIOLOGY AND PHYSIOLOGICAL CHEMISTRY

Edited by Holmes C. Jackson, Ph. D.,

Edward W. Becker, M. D., and Harry W. Carey, M. D.

*Clinical and Experimental Observations upon Cheyne-Stokes Respirations.*J. A. E. EYSTER. *The Journal of Experimental Medicine*, Vol. VIII, No. 5 October, 1906, p. 565.

The author's paper is based on a number of experiments in which periodic respiration was produced by cerebral compression, experiments with brain anemia consequent upon ligation of the cerebral arteries, two clinical cases of Cheyne-Stokes respiration occurring in connection with increased intracranial tension and eight cases of Cheyne-Stokes respiration occurring in other conditions.

He describes two methods that have been employed to produce intracranial tension, viz., local and general compression. In both cases, intracranial tension was followed by increased arterial tension and as long as the intracranial tension exceeded the arterial tension, the cerebral cortex was anemic. With each increase in arterial tension there was an increase in the respiratory activity and a falling of arterial tension was followed by lessened respiratory activity.

In most of his experiments the author used the general method and the animals employed were dogs.

In the first group of cases or where periodic respiration was produced, experimentally, by increased intracranial tension, his general conclusions are:

I. In tracings taken at any given time when conditions may be assumed to be fairly constant, the respiratory groups following long periods of apnoea are usually preceded by a rise in blood pressure, while with shorter periods of apnoea the respirations precede, slightly, the rise.

II. The rise of blood pressure is proportional to the depth and number of respirations in a group; the greater and more long continued the rise, the greater the respiratory activity.

III. The longest periods of apnoea are associated with the greatest falls of pressure and the most marked showing of the pulse rate.

IV. The most marked increase in pulse rate occurs when the rise of blood pressure is most marked.

V. As a rule, the descending groups in which the respiration is the largest, are preceded by a marked and sudden rise of blood pressure and by a sudden increase in pulse rate, while the rise preceding or accompanying the other groups is usually more gradual and the increase in pulse rate is not so marked before the first respiration occurs.

VI. If the rise of blood pressure precedes the respiratory group, this rise is associated with an increase in pulse rate, but if such a rise does not occur previous to respiratory activity, the pulse is not increased in rate until the beginning of respiration.

VII. Following the respiratory groups there is a fall of blood pressure and a gradual slowing of the pulse which reaches its fullest development coincident with the lowest point of blood pressure.

VIII. With the disappearance of the periodicity of the respiratory activity there is a disappearance of the blood pressure waves and of the variations of pulse rate.

The results of recent work prove most conclusively that carbon-dioxide is the normal and, under ordinary conditions, the most efficient stimulus to the respiratory centre.

Two conditions must be recognized which increase the stimulus to the respiratory centre:

I. An increase in the carbon dioxide tension and a lowering of the oxygen tension in the blood supply to the centre.

II. A reduction in the blood supply, its carbon dioxide and oxygen tension, when it reaches the center being unaltered.

In summarizing the results obtained by his experiments in the ligation of the cerebral arteries, the author shows that the irritability of the respiratory centre is remarkably susceptible to a considerable reduction of its blood supply. This peculiarity is not shared by the other medullary centres. The vaso-motor centre may and frequently does show its first response to stimulus when its blood supply is entirely shut off.

After ligation of the cerebral arteries, the blood pressure rises markedly and continues to rise many seconds after the respiratory activity has been completely stopped as a result of the anemia. The rise of blood pressure that results after raising the intracranial pressure above blood pressure, frequently begins when the blood pressure is extremely low, owing to a simultaneous inhibition of the heart and it may be a number of seconds before the rise of the blood pressure to a point above the intracranial pressure results in a renewed supply of blood to the vaso-motor centre. It is also evident that accumulation of carbon dioxide and lack of oxygen in the blood may act as a very efficient stimulus to the vaso-motor centre.

With increased intracranial tension Traube-Hering waves are evidently due to a periodic increase and decrease of the stimulus to the vaso-motor centre, the increased stimulus being coincident with an anemia of the centre.

As regards the comparative activities of the respiratory and vaso-motor centres, the following conclusions are justified:

I. The respiratory centre is normally more susceptible to slight changes in carbon-dioxide and oxygen than is the vaso-motor centre.

II. The normal irritability of the respiratory centre is more dependent upon a proper blood supply than is the irritability of the vaso-motor centre. The irritability of the former centre may be rapidly increased again as the anemia passes away.

III. The vaso-motor centre may respond to stimuli after many seconds of absolute anemia.

IV. By the action of anemia, the normal relations may readily and quickly become reversed, and the vaso-motor centre become more susceptible to the existing stimulus than the respiratory centre.

The third group comprises the observations of eight cases of Cheyne-Stokes respiration occurring clinically in conditions other than that of increased intracranial tension.

Two of these were cases of myocarditis and generalized arteriosclerosis, one of myocarditis and mitral insufficiency, two of myocarditis and aortic insufficiency, one of aortic aneurism associated with aortic insufficiency, one of nephritis with marked cardiac hypertrophy and insufficiency and one of nephritis with uremic symptoms.

Changes in blood pressure recorded by the tracings were constant in all these cases and were as follows:

During apnœa, usually about the middle of the period, a fall of blood pressure begins, gradually increases, and is associated with a slowing of the pulse which develops gradually. Both fall of blood pressure and slowing of the pulse continue to the onset of respiratory activity and reach their maximum at about the third or fourth respiration of the group. A gradual rise of blood pressure and a gradual augmentation in pulse rate begin from this point and increase throughout the remainder of the respiratory period and through, approximately, the first half of the following interval of apnœa. This rise in blood pressure is at first slow but toward the end of dyspnea and the beginning of the following apnœa it is more marked. It is thus apparent that the relations of blood pressure and respiratory activity which prevail here are almost the exact opposite of those observed with increased intracranial tension.

The author concludes:

I. In ten cases of Cheyne-Stokes respiration observed clinically the alternate periods of respiratory activity and apnœa were associated with Traube-Hering waves of blood pressure. The cases may be separated into two groups characterized by the relation of the respiratory changes to the changes of blood pressure. In one group, the period of respiratory activity was associated with a rise of blood pressure and the period of apnœa with a fall; in the other group, the reverse relations existed.

II. By means of cerebral compression, periodic respirations may be produced experimentally and the relation of the blood pressure changes to the respiratory variations are the same as in the clinical cases with increased intracranial tension, namely, a rise of pressure with each group of respirations and a fall with each period of apnœa. In the experiments during each respiratory group, the blood pressure rises above the line of intracranial tension and with each period of apnœa it falls below the line. With the disappearance of this relation, the periodicity of the respirations likewise disappears. It is probable that the same relation between the blood pressure and intracranial pressure exists when Cheyne-Stokes respiration occurs clinically in association with increased intracranial tension.

III. Disappearance of the periodic respiratory activity in the clinical cases of both groups is accompanied by disappearance of the waves of blood pressure.

IV. The waves of blood pressure cannot be regarded as a mechanical effect of the periodic respiratory activity; on the contrary, the latter must be due to the changes of blood pressure, or both phenomena may be referable to a common cause.

V. Cheyne-Stokes respiration in states of increased intracranial tension, with blood pressure waves rising and falling above and below the line

of intracranial tension, is due to a periodic activity of the respiratory, vaso-motor and cardio-inhibitory centres the underlying cause of which is an alternation of anemia and blood supply to the medullary centres. The vaso-motor centre, as the result of periodic increase and decrease of the stimulus, shows periodic variations in its activity. It is stimulated to greater activity during the periods of anemia and partially relaxes with each period of blood supply. During the periods of anemia, the respiratory centre loses its irritability for the acting stimulus and is therefore apnoeic. It is finally stimulated to activity, either as a result of an increase in its irritability from a preceding rise of blood pressure, or from a great increase in the respiratory stimulus. The cardio-inhibitory centre is stimulated by the periods of anemia. This stimulation causes slowing of the pulse which passes off to a considerable extent with the following period of blood supply.

VI. Cheyne-Stokes respiration had heretofore been regarded as always the manifestation of the same conditions and capable of the same explanation: the results of this work, on the contrary, show that two distinct groups of cases may be recognized, depending upon the relation of the blood pressure changes to the periodic respiratory activity.

VII. The medullary centres show great differences in their susceptibility to anemia. The respiratory centre is very susceptible to a much reduced blood supply; its irritability is rapidly reduced or lost upon the occurrence of marked or complete anemia, and is rapidly regained when the blood supply is renewed if the anemia has not been maintained too long. The effect of a considerable anemia upon this centre is entirely different from that of a normal or somewhat reduced supply of blood which is more venous than normal, that is, contains more carbon dioxide and less oxygen such as occurs in ordinary asphyxia. The vaso-motor and cardio-inhibitory centres are not nearly so susceptible to anemia. The former centre may, and frequently does, respond when in a condition of complete anemia.

VIII. I am able to confirm as a result of my experiments upon cerebral compression, in all essential details the conclusions of Cushing, and the general law formulated by him, namely, that "an increase of intracranial pressure occasions a rise of blood pressure which tends to find a level slightly above that of the pressure exerted against the medulla."

E. W. BECKER.

The Cause of the Heart Beat.

W. H. HOWELL. *Journal of the American Medical Association*, June 2 and 9, 1906, pp. 1665 and 1749.

This subject has been a disputed one since early in the 17th century, when Harvey described the blood circulation. His interpretation of the heart beat was, that the systole and the diastole were respectively, a contraction and relaxation of the musculature, due to an inherent property of the heart muscle itself.

A little later, Willis and Borelli claimed that the heart beat was due to nervous influences. Borelli's theory, which was the one generally

accepted, was that the nerves of the heart contained a liquid, *succus spirituosus* which escaped slowly into the heart and set up there an ebullition which was the immediate cause of the contraction.

In 1757, Haller succeeded, apparently, in disproving the neurogenic views in the form in which they had been proposed at that time. According to his theory, the cause of the heart beat lies in the inherent irritability of its musculature, and under normal conditions this property is aroused to action by the stimulating action of the blood as it flows into the ventricles from the veins and auricles. Although this view was generally accepted, Senac claimed that the stimulating action of the blood acted on the nerves of the heart rather than on the musculature directly.

These observations were followed by widespread experimentation, but the results obtained were conflicting. This was probably due to the lack of proper methods and instruments. Magnetic induction currents were first obtained in 1832 and soon after, similar effects from the galvanic current were obtained.

These methods helped wonderfully in the experimental work.

In 1845, Weber demonstrated the inhibitory action of the vagus nerve on the heart. His discovery opened a new line of investigation and also disposed finally of the erroneous view that the vagus serves as a motor channel through which the central nervous system controls and originates the heart beat.

Meanwhile another theory was advanced that the heart beat was directly dependent on the central nervous system.

After a series of experiments on the spinal cord of animals, Legallor became convinced that the stimulus or principle which maintains the heart beat is derived from the spinal cord in all of its parts and is conveyed to the heart through the branches of the sympathetic system.

That form of the neurogenic theory which made the heart's beat dependent on the central nervous system was finally disposed of when the true functions of the extrinsic nerves of the heart were demonstrated.

A new neurogenic theory now became very popular when, in 1844, Remak described nerve ganglia within the heart substance. This discovery seemed to prove that the cause of the heart beat lay in the automatic activity of the sympathetic ganglia present in the heart itself.

This theory was generally accepted for about forty years or until the results of the experiments of Gaskell and Engelmann became known. Gaskell was convinced that the heart muscle itself possessed the property of automatic rhythmicity and that this property was most highly developed in the tissue at the venous end of the heart. He believed that the systole began in the venous end and that the contraction spread as a peristaltic wave over the rest of the heart, its rate of conduction being rapid in the expanded and modified portions, the auricles and ventricles, and less rapid in the more primitive tissue, the auriculo-ventricular ring. He considered the nerve cells found in the heart merely as peripheral, sympathetic cells, in which the preganglionic fibres of the vagus end before being distributed to the cardiac muscle. They constituted, therefore, merely a portion of the inhibitory mechanism and were in no way connected with the causation of the heart beat.

One of the first facts to consider is the automaticity of the various parts of the cardiac musculature. When we consider the automaticity of the heart beat as a whole, it is obvious that it depends for its initiation on the properties of the small portion of the musculature which forms the mouths of the great veins.

The question now arises whether any portion of the heart muscle can continue to beat rhythmically if its connections with the venous end are severed. The recent evidence shows beyond question as far as the vertebrate heart is concerned, that every portion possesses, in some degree or other, the property of giving automatic rhythmic beats provided the proper conditions are maintained.

It is true, also, that certain parts of the heart in some animals are incapable of beating automatically under perfectly normal conditions, that is when supplied with the animal's own blood; it is evident that such portions of the heart have a latent property of automatic rhythmicity which may be aroused into activity when the proper conditions are provided.

The beats under such conditions are of the same order of phenomena as those normally exhibited by the venous end of the heart. If, therefore, we could find any portion of the heart entirely devoid of nervous tissue and could so modify its condition as to cause it to give beats of the usual cardiac type, we would have almost conclusive proof of the myogenic origin of the heart beat.

Various experiments and observations have been made on muscular tissues, devoid of nerves, showing rhythmic contraction but the only observation which seems to remain unchanged is the fact that the foetal heart beats before it possesses nervous elements. With improved histologic methods even this fact may be disproven.

Recently Carlson has made the interesting discovery, that the heart of the limulus depends for its rhythmic beat on the activity of nerve cells. His work seems to show conclusively that not only the automatic beat of the heart, but the conduction also, of the wave of contraction is entirely dependent on the action of the nerve cells in the median nerve cord of the heart.

It is questionable, however, if we are justified in applying this result, obtained on an invertebrate heart, to the hearts of the vertebrate animals.

The cardiac muscle in the vertebrate heart possesses certain peculiar properties which distinguish it from the usual skeletal muscle. The most important and characteristic property is a long refractory period. The heart of the limulus does not possess this property and therefore resembles skeletal muscle and does not possess the property of automatic rhythmicity, but receives its stimulating impulses from the nervous system. Unless it can be shown that the refractory period is not a characteristic and distinguishing property of cardiac muscle as it exists in the higher vertebrates, this discovery that the heart beat of the limulus has a neurogenic origin, fails to have any direct bearing on the problem of the heart beat.

Another fact which tends to support the myogenic view is, that, under various conditions the wave of contraction may begin in the ventricles, proceed to the auricles and finally to the sinus venosus.

The supporters of the neurogenic theory have assumed that the nervous apparatus in the heart forms a peculiar interconnecting network, the like of which is not found in the other automatic nervous mechanisms of the body. This theory is not supported by facts and of course does not strengthen their side of the argument.

It was formerly held that the myogenic theory is inapplicable to the mammalian heart, because no muscular connection exists between auricles and ventricles.

This objection, however, has been completely removed in recent years by His, Tawara, Erlanger and others. They have proven beyond doubt that a small muscular slip passes from the auricle into the ventricular septum and by this slip the wave of excitation is conveyed from auricle to ventricle. If this bridge is compressed or destroyed there is more or less of a heart block formed.

Neither the myogenic or neurogenic theory is proven by this discovery, because the bundle is provided with a nerve network similar to that found enveloping the muscular tissue of the rest of the heart, and naturally the neurogenists attribute to this network the functions that the myogenists would assign to the muscular bundle itself.

Hering and others have observed in the isolated mammalian heart, that the inhibitory and accelerator nerves continued to give their respective effects for a long period of time. The results of the various experiments on lower animals seemed to show that the maintenance of the automatic rhythm in the heart so long after excision or after somatic death cannot be due to the activity of intrinsic ganglionic cells. Since, moreover, the accelerator fibres retained their irritability in these experiments for very long periods after death, it would seem probable that they do not end in the ganglia of the heart but are distributed rather directly to the heart muscles.

Such a conclusion implies that the rhythm of the heart beat originates in automatic processes within the muscular tissue itself.

Much experimental work has been done to determine what this inner stimulus is and many theories have been suggested. The most modern and seemingly the most hopeful line of investigation was started by Ludwig in 1875. It was then that the study of the relations of the inorganic constituents of the blood to the heart beat began.

Although it was made clear by these studies that the inorganic constituents of the blood bear an important relationship to the development of the heart beat, the presence and importance of the minute amounts of calcium salts were overlooked.

In 1883, by accident, Ringer was lead to study the effect of the calcium salts on the heart's contractions and as a result devised his artificial serum. This solution contains certain amounts of sodium, potassium and calcium salts and sometimes a trace of sodium carbonate. The evidence from experimental work indicates that the potassium salts are concerned chiefly with the production of the condition of relaxation, the phenomena of diastole and inhibition. In the matter of the contraction of the heart, the rôle assumed by the sodium and calcium salts, respectively, has excited much discussion and each theory has its followers.

The following facts must be taken into account by any hypothesis which attempts to picture the processes causing the rhythmic contraction and dilatation of the heart muscle.

I. The heart possesses within itself a store of energy-yielding material, such that it may continue to give many hundreds of thousands of contractions after its supply of nutriment has been cut off.

II. Each contraction, whether caused normally or by an artificial stimulus, is maximal, and, therefore, probably uses up all of the energy-yielding material which is at that moment in an irritable condition, that is to say, in such a condition that it may be acted on by a stimulus.

III. The amount of this material in irritable form is nil during the phase of systole, but increases in amount throughout the period of diastole. We know, for example, that if stimulated just at the beginning of diastole, the heart muscle gives a small contraction and that the contraction, which may be obtained later by artificial stimulation, increases in extent the farther the diastole has progressed.

IV. If the above statements are correct, it follows that the store of energy-yielding material exists in some non-irritable form and that during the phase of diastole a portion is converted into an irritable form capable of being acted upon by a stimulus.

V. The presence of certain inorganic salts is necessary for this transformation from the non-irritable to the irritable condition.

In order to picture the relations of the inorganic salts to this process, the author has adopted the following principle to guide him in his investigations; the well-nourished heart contains a large supply of energy-yielding material, which is in a stable form so that it neither dissociates spontaneously nor can be made to do so by the action of external stimuli. It is possible that this stable, non-dissociable form consists of a compound between it and the potassium contained in the tissue. This compound reacts with the calcium or with the calcium or sodium salts and a portion of the potassium is replaced and a compound is formed which is unstable. At the end of the diastolic period, this compound reaches a condition of instability such that it dissociates spontaneously, giving rise in the chain of events that culminate in the normal systole.

Before spontaneous dissociation occurs, it may be hastened prematurely by an external stimulus, as we know to be the case when a mechanical or electrical shock is applied to the heart at any time after its diastole has begun.

From this point of view the rôle of the calcium or of the calcium and sodium salts consists in replacing the potassium and converting a part of the store of stable material into an unstable, easily dissociable compound. We are not obliged, therefore, to assume the existence of any specific inner stimulus.

An hypothesis of this character accounts readily for some of the most characteristic features of the heart beat

E. W. BECKER.

ALBANY MEDICAL ANNALS

Original Communications

THE RIGHT UPPER ABDOMINAL QUADRANT.

The Vice-President's Address to the Medical Society of the County of Albany, delivered at the Semi-Annual Meeting, October 9, 1907.

By HOWARD E. LOMAX, M. D.,

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Mr. President and Gentlemen:

In presenting this Vice-President's address, I wish first to express my sincere appreciation of the honor that has been conferred upon me by this Society in electing me its Vice-President. To be so highly honored is indeed gratifying to me, from the fact that the office was unsought and came to me without any soliciting on my own part, and I want to take this opportunity to thank the members for this mark of esteem.

In choosing a topic for my vice-presidential address, I have tried to select one that would be of equal interest to the surgeon and physician, and, after much careful consideration, I know of no field the tilling of which brings forth so many points of interest to the practicing physician and surgeon alike as does the upper right abdominal quadrant.

In this quarter of the abdomen are grouped vital organs, pathological processes of which not only extend to other organs of the group, but give rise to marked abnormal conditions in the most remote parts of the human system. A plane passed through a line drawn perpendicularly from the ensiform cartilage and a second plane passed through a horizontal line on a level with the umbilicus divides the abdomen in four parts. The right upper part extends well up in the thorax and is limited above by the diaphragm and in this region are found the liver, gall-

bladder and ducts, pylorus, superior portion of the duodenum, head of the pancreas, right kidney with its supra-renal capsule, a portion of the transverse colon and part of the great omentum; a group of organs that is of great interest to the anatomist, the physiologist, the surgeon and the physician.

Furthermore, this region furnishes material for the most careful study of the specialist, no matter what his specialty may be. Thus the neurologist and mental expert sees various manifestations of auto-intoxications which arise in the organs of this group. The dermatologist has presented to him skin lesions that are due to either the production or absorption of poisonous material by the chylopoietic system. The ophthalmologist frequently makes a diagnosis of nephritis long before the patient is aware of abnormal kidneys.

Somebody, the reference has been lost, has called attention to the frequent occurrence of tonsillitis and angina associated with infected gall-bladders. The importance of the tonsil as the port of entrance of various pyrogenic infections is already well known and here is an opportunity for the throat specialist to look further than the tonsils. Indeed, it would be of interest to him to ascertain whether the tonsillitis was a part of a general streptococcal infection starting from the gall-bladder, or whether the cholangitis was a manifestation of a tonsillo-genous bacteriemia. The throat specialist may yet be able to point out which of the conditions is primary and throw out some hints as to the route of infection.

The rhinologist relieves acute congested conditions of the upper respiratory tract by stimulating the organs of this group when he gives as his initial treatment a dose of calomel. After he hears the murmurs of a non-compensating heart, the expert in this line looks for an enlarged and congested liver. David Riesman (No. 1), of Philadelphia, has written an interesting article on "The Development of Cardiac Murmurs During Attacks of Biliary Colic," and reports a case in which the murmur entirely disappeared after a successful removal of a stone from the common duct.

The works of Gangolphe (No. 2), Fabre (No. 3), Tessier (No. 4), and others, show that the heart specialist can find interesting investigation in all conditions causing jaundice, and especially at this time, as there has been little done in this direction since Rendu (No. 5) wrote his paper in 1883.

In this connection it may be interesting to note that Riesman, to whom I am indebted for my references, offers the following hypothesis as to the cause of the murmur: "The pain, which is proverbially the most agonizing in character, in the predisposed, causes dilatation of the heart with a temporary insufficiency of the mitral valve; perhaps, also, of the tricuspid. He says "in the predisposed," because if pain were the only etiological agent, then every case of biliary colic ought to have a murmur. The heart must be potentially dilatable. (No. 6.)

A careful study of the right upper abdominal quadrant in the dissecting room of the Albany Medical College, together with a brief review of the physiology of its organs, has vividly impressed upon my mind the important truth that *every specialist should be more or less a general practitioner, and every general practitioner should, to a certain extent, be a specialist on all subjects.*

For these reasons, gentlemen, I invite the attention of all medical men to a consideration of the diseased processes found in the right upper abdominal quadrant, as especially viewed from the standpoint of the physician. Particularly from the standpoint of the physician, because, first, I am no abdominal surgeon and, secondly, because most, if not all, of the late writers in this field have been surgeons.

A few years ago the surgeon's labors were confined to that portion of the abdomen situated below the level of the iliac crests and the contents of the right iliac region were particularly interesting to him. At that time the physician was high commander of all parts of the abdomen above. But the surgeon soon learned that, with clean surroundings, the clean knife and clean hand could go higher up and he soon made his appearance in the umbilical and lumbar regions, attacking organs not only in front of the peritoneum but including in his operations the kidneys and ureters behind the peritoneum.

Then, by the labors of such men as Moynihan (No. 7), Robson (No. 8), the Mayos and our own illustrious Vander Veer and MacDonald, pathological conditions within the epigastric and hypochondriac regions became surgical ones and to-day the surgeon has transferred most of his interest from the lower right to the upper right abdominal quadrant. The physician has been gradually crowded out of the abdomen and must now share with

the surgeon many diseases that were a few years ago considered strictly medical.

Strange as it may seem, our knowledge of the pathology of these diseases has not been learned from the physician. Nor has it been learned by the anatomist in the dissecting room; nor by the pathologist on the post mortem table. On the other hand, the up-to-date knowledge of the pathology of these morbid processes has been learned in the operating room, on the operating table and by the operating surgeon.

Now, from the fact that the surgeon has done all this; from the fact that many diseases that were once looked upon as entirely medical are now considered as partly, and in many cases wholly, surgical; and in spite of the fact that the physician has apparently been crowded out of the abdomen; the physician ought by no means to relinquish his interest and study in these parts. On the contrary, it is his duty to himself and to humanity to become more interested than ever in these diseased processes; and the physician, pathologist and surgeon should all join hands around the operating table and study these conditions from their respective standpoints.

The pathologist already has his notes on the dead organs and the physician has his notes on the history and symptomatology of the case; the surgeon opens up before their very eyes, for observation and study, the diseased parts as they are in the living. The physician's knowledge forms one link, the knowledge of the pathologist the second link and the surgeon furnishes another link that unites the chain of evidence into vast and valuable truths from which will be obtained a proper understanding of both the medical and surgical science of these organs and the various branches by which this science may be characterized will be inseparably connected with everything that enters into the prevention, elimination and cure of these diseases.

There will always be medical diseases; the physician will always find work in the abdominal cavity; and it is of paramount importance that he recognize these diseases. It is the family physician who first sees these patients and it is he who is responsible, not only for a proper diagnosis, but for an *early diagnosis*. Not only should the family physician make the initial diagnosis, but he should be able to make some discrimination in his cases, so that he will know which cases to turn over

to the surgeon, which to the specialist and which to keep for his own treatment.

A whole volume might be written on the right upper abdominal quadrant; and it would be impossible for me to take up all its diseases, even cursorily. Hence, it is my intention to-night to deal solely with a few salient features that will help the physician in arriving at an early diagnosis of some of the most important pathological conditions found in this quadrant. My observations will be viewed from the standpoint of the physician only, leaving all surgical and pathological remarks to the surgeons and pathologists present for their discussion.

It is never easy, and often impossible, to make a diagnosis of the various conditions found in this quadrant, during their early stages. No combination of symptoms is typical of any one condition. Here errors of diagnosis are not made from insufficient knowledge or lack of ability in making an examination; but rather to wrong interpretations. The clinical signs here presented require much judgment for their proper interpretation and hence it is necessary not only to consider the whole syndrome, but to take careful account of everything that enters into the history, development, duration and to employ all methods at our command for our keenest observation; for often a correct diagnosis hinges upon some apparently small detail. Each symptom must not only be carefully weighed, but the patient's general condition must invariably be considered. Indeed, it often happens that the physician has to exclude every possible condition before he can arrive at a diagnosis.

Of course, if we wait, typical symptoms will often arise; but then our diagnosis is too near the post mortem,

The above remarks are particularly true of carcinoma of the stomach; and it is just here that it is of vast importance that we make an early diagnosis; because, if we are to do these patients any good, we must turn them over to the surgeon early, before cachexia, starvation, anemia and damaged kidneys have robbed them of many chances.

My experience has taught me that in these cases, even if the tumor cannot be removed, the surgeon can do much to make a prolonged life comparatively comfortable in sidetracking the food around the growth by a simple gastro-enterostomy.

A tumor, cachexia, emaciation, ecstacy, hematemesis, large quantities of free hydrochloric acid and an absence of lactic

acid may not only be found in an incipient carcinoma, but all these may be present in such conditions as cicatricial pyloric stenosis engrafted upon an ulcer which has been followed by a palpable tumor; or these symptoms may be caused by muscular pyloric hypertrophy due to a combination of hyper-secretion and ulcer; and it is in these cases that it will be necessary to watch the patient for a while, to make several examinations of the stomach contents, and to make these examinations at different times of the day.

It is often difficult to differentiate between incipient carcinoma and atrophic gastritis. Carcinoma gives rise, in due time, to more marked emaciation, peptic powers are continually decreased and repeated examinations of the stomach contents show constant lactic acid, small amounts of blood and many long bacilli. As the cancer advances, there will be sub-acidity or anacidity. Hence, absence of free hydrochloric acid, profuse lactic acid fermentation, coffee-ground material, advanced ecstacy and cachexia.

At this time the question comes up: When shall we turn these cases over to the surgeon for operation? In answering this question, I can do no better than to quote freely from an article by W. G. Thompson (No. 9). He says an operation in gastric cancer is not only justifiable, but desirable, under the following conditions:

1st. When the patient's age is between forty and sixty-five years.

2nd. When there is a rapid and decided loss of weight and strength, not due to chronic gastric catarrh, neurasthenia, mental strain or worry, or any general disease, as diabetes.

3rd. Evidence of stagnated stomach contents.

4th. Failure to improve after a few weeks of medical treatment.

He says, with the above four conditions, exploration should be seriously considered, despite the absence of pain; and he warns us not to place too much dependence on the demonstration of hypoacidity or anacidity, nor upon the carcinomatous cachexia, as these are not reliable and often wanting.

As a fifth requisite, he adds a leucocytosis of from 12,000 to 16,000, with polynucleosis, moderate secondary anemia and low color index.

6th. Decided stomach dilatation.

7th. Vomiting, with no definite relation to food ingestion.

8th. Occult or visible blood in vomitus or stools.

9th. Rigidity and tenderness on deep pressure over the epigastrium or right hypogastric regions.

Incipient gastric carcinoma is liable to be confounded with such diseases as gastric and duodenal ulcer, hemorrhagic erosions and nervous cardialgia. In gastric ulcer the patient is young, the strength is well maintained, the tongue is red and moist, the appetite would be good were it not for fear of food bringing on pain, and there is hyperacidity. Vomiting comes on soon after eating (one or two hours); the digestion is rapid and the vomit shows well digested food and gives a distinct Congo reaction.

The cardinal symptoms of ulcer are pain, hematemesis and increased values for hydrochloric acid. The pain is focused to a circumscribed area in the gastric region and there is a circumscribed painful pressure-point next to the spinal column. The pain generally comes on regularly at the height of digestion; but if the ulcer is situated in the posterior wall of the stomach, the pain is not so severe and there may be no painful pressure-point. Otherwise, the pain comes on with great regularity at the height of digestion and when there is a maximum amount of hydrochloric acid in the stomach.

In view of the fact that hyperacidity predisposes to ulcer and that in some cases it is difficult to differentiate between the two conditions, it is well to treat the patient for an ulcer and then conclude on a diagnosis from the result of the treatment.

Hematemesis is not a conclusive proof of the existence of ulcer, as it may occur in carcinoma, hemorrhagic erosions, first stages of hepatic cirrhosis, varicosities, especially ruptured esophageal varix. In ulcer the hemorrhage is profuse, while in cancer it is small.

Sarcomata and non-carcinomatous growths are of subordinate importance to us, as they are rare and impossible to differentiate from carcinoma.

Before going any further, it may be well to consider one or two anatomical variations as found in this region and to bear these variations in mind when palpating the abdomen.

The position of the pylorus is not only variable within normal limits, but it may be drawn outside these limits as a result of congenital defects or adhesions. It follows, therefore, that the

pyloris may be not only situated in the median line but to the right, in which event it may be not only adherent to the liver but far up behind this viscus.

Lund (No. 10) has called attention to the fact that the gall-bladder also varies in its relation to the median line. Thus, in males whose livers are high up, the gall-bladder lies well up under the ribs and further from the median line, simply because the liver is in its normal position in the thoracic cavity, tucked well up in the hollow of the ribs. In women, however, the gall-bladder lies lower down and nearer the middle line, because in women the corset pushes the liver downward and the edge of the thorax pushes it inward.

In dealing with duodenal ulcers no distinction will be made here as to whether they are simple, embolic, amyloid, decubital, or those following cutaneous burns, except to say that the clinical history may lead the diagnostician to suspect one of the above varieties.

Duodenal and gastric ulcers have so many points in common that there are really no characteristics by which they can be differentiated; and very often a differential diagnosis is immaterial, so long as an ulcer is recognized. Latent duodenal ulcer gives rise to little or no pain, has no typical symptoms and is generally unrecognized until suddenly there is a hemorrhage, which is liable to be severe, and blood is vomited from the stomach and passed from the bowels. This blood may be unchanged or greatly altered by the action of gastric and intestinal juices. That passed from the bowels may have a tar-like consistency. Severe hemorrhage occurs in about one-third of the cases. Before there is a hemorrhage, the appetite and stools are generally normal; dyspeptic symptoms are rare and there may be diarrhea, although constipation is the rule. Vomiting is rare and, barring the blood, is not characteristic. There may be an increased, a decreased or an absence of hydrochloric acid. In gastric ulcer pain is supposed to be relieved by vomiting; while in duodenal ulcer there is no relief from vomiting and it is claimed by some that in duodenal ulcer the pain comes on later, say four or six hours after eating, and that it is situated further to the right; but none of these points are by any means reliable.

In pyloric ulcer there are pain, gas, acidity and the vomiting is more intense; while in duodenal ulcer the pain, gas, acidity

and vomiting are not so well marked and the pain resembles more that of gall-stones. Icterus is an exaggerated symptom of duodenal ulcer, as it is rare and when present means some complication.

If the ulcer ruptures, we get the serious symptoms of sudden pain, all the manifestations of collapse and evidence of fluid in the peritoneal cavity; all of which are frequently followed by speedy death. If the patient lives long enough for a hypochondriac or epigastric peritonitis to develop, it will be impossible to differentiate between a perforating ulcer, pancreatitis and acute cholecystitis. Furthermore, in perforation the fluid may collect in such a manner that it is impossible to differentiate between peritonitis due to trouble in the gall-bladder or appendix.

Moynihan (No. 11) has called attention to the fact that the fluid from a perforated ulcer frequently passes into the right iliac fossa and the symptoms produced may, and indeed often do, lead to a diagnosis of appendicitis.

Diffuse peritonitis, suppuration, cicatrization and atrophy of the pancreas are some of the secondary conditions following a duodenal ulcer; and in these secondary conditions icterus is a prominent symptom.

Again, duodenal ulcer is apt to be confounded with cholecystitis, especially when a threatened perforation sets up a local peritonitis. There is an anatomical reason for this, because the second part of the duodenum is in direct relation with the common duct and a little below the neck of the gall-bladder.

We have yet to notice some points arising in the course of stones in the gall-bladder, common duct, cholecystitis, cholangitis-suppurativa, acute and chronic pancreatitis.

In cholelithiasis the attacks are short, decided and there is a lack of stomach trouble between the attacks. These attacks have nothing whatever to do with food. They are not eased by it nor can they be traced to it, although there may have been some error of diet. These attacks are independent of food because they come on some time after eating, usually at night. These attacks are irregular, the pain is sudden, severe, has a wide field of radiation and is always accompanied by a spasm of the diaphragm. Violent retching, vomiting and gas are marked symptoms during the attacks only and there is little relief from vomiting or expulsion of gas. Generally the first thing that calls our attention to a cholelithiasis is one of these attacks of

gall-stone colic; and this colic may be mistaken for intestinal colic, cardialgia, gastric or duodenal ulcer. In duodenal ulcer, while the pain has decided periods, these attacks are irregular as to time of separate attacks, but regular as to periods. The pain may or may not be sudden, but here it has a limited field of radiation. There is no spasm of the diaphragm unless there is a complication. The pain is somewhat dependent upon food, as at first food gives relief but pain and distress again appear later. While there is gas, vomiting and acidity, vomiting and belching afford decided relief.

In intestinal colic the pain is located in the right hypochondriac region, is not so severe and disappears on the appearance of belching, passing of flatus or defecation.

In lead colic we get the history of occupation, its usual occurrence in men, the blue line on the gums and an absence of icterus.

In renal colic the pain is situated more in the lumbar region and radiates along the course of the ureter down to the genitals.

Too much attention must not be paid to the presence or absence of icterus in cholelithiasis; because, while it is a prominent symptom, it may be absent in stones situated in the cystic duct or when the stones are small and readily pass through the common duct. When it does appear, it is not severe and is noted for fluctuations in its intensity. After all, the most positive criterion is the presence of gall-stones in the stools and here the stools are alternately colored and acholic. At times, the stones can be felt in the gall-bladder.

In occlusion of the bile duct, due to compression or inflammation, the gall-bladder is usually distended; while in gall-stones it is contracted.

Suppurative cholangitis is indeed a puzzle for the diagnostician if it is not accompanied by jaundice, because there may be no objective symptoms to direct the attention to the gall-bladder. In this case the physician seldom suspects the gall-bladder and makes a diagnosis of malaria. In cholangitis the temperature rises and falls frequently; the highest temperature is toward evening; the variations in temperature are of great irregularity in their occurrence and the periods of apyrexia are short and not distinct. At times there may be marked subnormal temperature. Chills are frequent, irregular, come on at any time during the day and are unlimited in number. An examination of the blood would clear up the diagnosis of malaria.

The above symptoms added to pain and tenderness in the region of the gall-bladder, icterus and a past history of attacks of gall-stone colic, or typhoid fever, would justify one in making a diagnosis of cholangitis suppurativa and immediately turning the patient over to the surgeon.

In liver abscess the temperature is higher, the icterus is not so marked and the pain is not confined to the gall-bladder area. However, if the liver abscess has been of long duration, there may be little or no temperature and an absence of leucocytosis.

Of the diseases of the pancreas that deserve our attention, carcinoma is the most important; because the duration of the condition is short, average about six months, and the diagnosis is generally most difficult. It is possible to detect the tumor in only about one-fourth of the cases; and diabetes and fatty stools are such rare symptoms that they are not to be depended upon.

Bard and Pic (No. 12)—so-called Bard-Pic group of symptoms—have called attention to a group of symptoms that are so suggestive of pancreatic cancer as to call for special mention. These are tumor, pain, jaundice, emaciation, cachexia and chemical manifestations in the feces and urine, due to diminished or altered pancreatic function.

Now in order to make a differential diagnosis, each one of the above symptoms has to be studied separately, as many of the symptoms possess a certain peculiarity in pancreatic cancer not present in any other abdominal condition.

Jaundice and tumor are the most important symptoms. Here the jaundice is peculiar because it is chronic, develops slowly, steadily increases, never diminishes and never disappears. The jaundice is deep, progressive, accompanied with extreme dilatation of the gall-bladder and the liver is generally of normal size. Jaundice due to biliary stones comes on suddenly; while in pancreatic cancer it comes on gradually. Sometimes it is difficult to tell whether the jaundice is due to pancreatic cancer or to a process in some other organ; but a normal liver with a rapid cachexia is very indicative of cancer of the pancreas and ascites will always follow a cancer of long duration.

The tumor possesses no peculiarities. It is located in the region of the pancreas but it will be necessary to exclude tumors in the vicinity.

The cachexia comes on so early and is so pronounced that it is often called the cachexia praecox. Debility is especially marked and extreme prostration is more marked than in cancer of any other digestive organ. Frequent fainting spells are common.

The pain is also peculiar in that it is not only simply intense, but with the pain there is a feeling of distress. Pressure on the solar plexus may be the cause of this extreme pain and prostration and hence we have the term "celiac neuralgia." The temperature is peculiar in that it may be sub-normal.

The results of the examination of the feces and urine are of diagnostic value, but not conclusive, as in cancer of the pancreas there may be little or no loss of function. As a rule, the digestion of proteids is markedly poor; the passages contain undigested muscle fibres and there are fatty stools. The urine shows a variable amount of sugar.

It is often difficult to distinguish between cancer and chronic indurative pancreatitis, even when there are diabetes, fatty stools, jaundice and a palpable tumor of the head or entire pancreas. While the existence of syphilis, alcoholism or arteriosclerosis would not necessarily exclude cancer, still these conditions would lead one to a diagnosis of induration, as would also a chronic cholelithiasis; because secondary pancreatitis is not rare in the course of this disease. Still, we can hardly do more than suspect indurative pancreatitis.

Suppurative pancreatitis can not always be diagnosed and it is absolutely impossible to make a correct diagnosis in cases accompanied by a decided local or general peritonitis. The typical symptoms are violent pain, first in the epigastrium and then gradually extending over the whole abdomen, sensitiveness, especially over the epigastrium, nausea, vomiting, a typical fever and prostration.

As these symptoms will not diagnose an abscess, it will be necessary to exclude all diseases of the stomach and duodenum, particularly ulcers and cancer. Here the sudden onset with the presence of diabetes will help exclude cancer. If, in cases of doubt, an inflation of the stomach and colon shows a painful tumor situated either behind or between these organs and not connected to the liver, spleen or stomach, be very suspicious of the pancreas and if there is fever together with fluctuation, send for the surgeon, as suppuration is very fatal unless it rup-

tures in the intestine, which is indeed very rare. Remember that fluctuation is seldom made out.

Primary sarcoma of the pancreas is so rare as not to deserve our attention here, save to say that it is generally of the melanotic variety.

Cysts of the pancreas may be diagnosed if there are colicky pains resembling celiac neuralgia, steatorrhea, diabetes, fluctuating tumor and stools containing undigested muscle fibres and fat.

There is no doubt but what the pancreas is occasionally invaded by syphilis, but such a condition has never been positively diagnosed. In a syphilitic history, a resistance in the region of the pancreas, together with diabetes, fatty stools and azotorrhea would be very suggestive.

In pancreatic tuberculosis the symptomatology is far from clear and it is impossible to make a diagnosis.

Pancreatic hemorrhage, not due to traumatism, can at the best be only surmised and hemorrhagic pancreatitis can be only suspected under such favorable circumstances as violent pain occurring during apparent health, vomiting, collapse and speedy death, all these following in the wake of atheromatosis, syphilis, obesity or alcoholism.

While the diagnostic hints here suggested have been far from complete and given in a somewhat fragmentary manner, I trust they will be of some service, especially to the family physician.

As a finale, I would direct those who are especially interested in the various conditions arising in the right upper abdominal quadrant to the fifth and sixth volumes of Nothnagel's Encyclopedia of Practical Medicine, where they will find a most complete bibliography.

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THE EARLY DIAGNOSIS OF PULMONARY
TUBERCULOSIS.

By DANIEL V. O'LEARY, JR., M. D.

Early diagnosis of pulmonary tuberculosis is important because when such a diagnosis is made the universal scourge of the human race can be successfully treated. In the early stage we cannot diagnose tuberculosis by means of the microscope because caseation has not yet occurred and the bacillus does not make its appearance in the sputum before the tubercle breaks down. But there are many significant symptoms which frequently occur and will aid us to a certain knowledge of our patient's physical condition even when tuberculosis is not suspected. A Hippocratic axiom is "From a spitting of blood there is a spitting of pus." Hemoptysis is one of the earliest signs of pulmonary tuberculosis. First be sure the hemorrhage comes from the lung. The hemorrhage is usually but not always slight. Often only a streak of blood in the sputa is all that is to be found. It usually is repeated at longer or shorter intervals. This symptom often occurs in apparently healthy people in whom no other sign is present. Yet it is important and should be remembered that such instances are not uncommon and the patient may retain his health for many years.

Ware¹ noted 386 cases in his private practice, from which only sixty-two recovered and pulmonary disease did not develop. During the years 1890 to 1895, inclusive, there were noted in the German military hospitals 480 cases of hemoptysis in which the hemorrhage was due to no apparent cause. Of these 417 were certainly tubercular as was afterwards demonstrated. Osler² says that sixty to eighty per cent. of all cases of hemoptysis are tubercular. Many other observers place the percentage lower. However, the foregoing statements serve to show how important this symptom is.

Slight afternoon rise of temperature is an important sign and should always be noted if present. Though usually it is fairly constant in children, in adults it is not. It may be remittent or intermittent. Present some days and at other times absent without any regularity in its appearance.

Atypical hemoptysis and slight afternoon rise of temperature when combined with poor nutrition are very significant. Lawra-

son Brown³ affirms that such a combination is positive evidence of the presence of tuberculosis, especially when there is loss of weight. Musser⁴ lays much stress upon repeated attacks of fever and says that when combined with slight pulmonic symptoms often point out the coming pulmonic disease.

A long continued dry cough or laryngeal huskiness are often the first signs of pthisis and when combined with a slight rise of temperature should lead to a physical examination.

An interesting but not well-known phenomenon observed by certain physicians for a number of years is a unilateral mydriasis as an early sign of pulmonary tuberculosis. Though not always present, it is often found. Bichelonne⁵ remarks "The mydriasis is probably due to direct irritation of the sympathetic nerves, by the lung disease or by the glands in the neighborhood." Roque⁶ noted and reported unilateral pupillary irregularity over thirty years ago and Rampoli,⁷ in 1885, published two cases in which a right-sided mydriasis was supposed to be dependent upon a sympathetic irritation incident to an apical tuberculosis. Destree⁸ claimed that a premonitory sign of consumption is unequal pupils and that it exists in ninety-seven per cent. of all cases. Fowler⁹ and others have referred to it. The writer has observed this sign and believes that it deserves the attention of the medical profession.

A beginning pulmonary tuberculosis is often masked by gastric irritation and indigestion, by chloro-anemia and amenorrhea in girls, especially under twenty years of age, while the true condition is not discovered until well advanced. Malaria, especially in districts where intermittents prevail, is often diagnosed when the condition is a beginning pthisis. Pleurisy of any kind, but especially a dry pleurisy is a common mode of onset. But the cough persists and the patient at times is feverish, then gradually signs of apical disease manifest themselves.

Pain is not of much importance as it may or may not be present and occurs in other conditions, however, in tuberculosis the most common location is beneath the scapula or referred to the apex and when associated with pleurisy is often found in the lower thoracic zone. Sweating is common in all stages of tubercular disease. Though more common in advanced cases, it often occurs early, especially when the patient is sleeping or after a drop of temperature in the early morning hours.

Any of the foregoing symptoms may occur in an otherwise

healthy individual and when noticed a complete and careful examination of the thorax is indicated. Tuberculosis may occur in any person of any build, but the long narrow thorax with wide intercostal spaces, narrow costal angle and winged scapula demand an examination that should be made with the greatest care and accuracy. After stripping the chest we compare both sides as to color, contour and movement. Antero-posterior mensuration will often detect a difference in lung capacity which is so slight as not to be otherwise observed.

Another important physical sign is a retardation in the movements over the affected portion of the lung and a diminution of the excursion of the diaphragm on the affected side, best shown by Litten's shadow. Tubercular cervical and axillary glands should never be overlooked, as they may precede pulmonary pthisis for months and even years. It is well to bear in mind that the corresponding apex of the lung may be involved. Special examination of the clavicular region should be made. Note if one clavicle is more prominent and if the spaces on either side of the bone are deeper than the corresponding spaces on the opposite side.

Before dullness is at all marked, disease at an apex may be indicated by expansion, a good method to gauge expansion is to place the hands in the sub-clavicular spaces and then in the lateral regions, each time asking the patient to slowly draw in a full breath. Percussion is of negative value in the early diagnosis of this disease, but auscultation is of great value.

The earliest auscultatory sound is a rough and slightly diminished respiratory murmur, which is produced by slight inflammatory changes in the bronchioles causing the air to pass over a rough surface through a narrowed tube. Rales are rarely heard, but may be present on damp days, especially in the morning and be absent in the afternoon, or in dry weather. An early physical sign is bronchial echo, which is elicited by having the patient utter the words ninety-nine after taking a deep inspiration. At the end of or immediately after the word ninety-nine there will be heard a high-pitched bronchial air sound, similar to a bronchial sound during expiration, as in instances of which there is an induration of any part of the lung. This sign can only be heard during expiration after the lung has been well inflated. The bronchial character of the sound is much higher pitched than that which is heard during expiration without the addition of

the voice sound. When ninety-nine is uttered the tongue presses against the teeth. Thus the air passing from the lung is suddenly stopped and backed up into that organ. When the word is finished the air rushes out giving a higher pitch to the sound produced thereby. This is the explanation given by Dr. Amyx¹⁰ of St. Louis, who states that the value of this sign is that it can be heard in any beginning consolidation of the lung. A dry pleurisy over the apex with a persistent murmur is an important early sign.

Radioscopy has been of value in the diagnosis of enlarged bronchial glands and deep-seated lesions which a physical examination could not elicit.

As a last resort we have tuberculin. Although when carefully administered it is said to be perfectly safe, and should be used in all doubtful cases, yet it should not be used until all other signs have failed. Often it uncovers a masked battery that could not be otherwise found. Positive results do not always indicate tuberculosis. A negative result with large doses of tuberculin is more important than a positive one. In the former instance one can state that tuberculosis is absent. The laboratory has given to us newer tests, such as the opthalgo-tuberculin test and the opsonic theory, but these are not considered in this paper because up to the present time they have not yet been proved to be absolute.

No one physical sign or symptom is diagnostic. A diagnosis should never be made except on a combination of symptoms. As the disease progresses other symptoms appear in fairly regular order. Remember that adolescence and early adult life is the common period in which pulmonary tuberculosis develops. Pre-disposition and heredity must be always carefully inquired into and the history of exposure and occupation should likewise be investigated.

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Correspondence

EPITHELIOMA OF THE LARYNX.

To the Editor of the ALBANY MEDICAL ANNALS:

As my article "Epithelioma of the Larynx" which was published in the November ANNALS, seems to have caused a little misunderstanding on the part of the Bender Laboratory, I wish to take this occasion to say that no statement made in my paper was intended to reflect in any way upon the microscopical diagnosis of cancer of the larynx. Nobody has a higher regard for the work of the laboratory than I have. The statement I made was that microscopical diagnosis of cancer of the larynx was often difficult, and misleading. I also stated very clearly, however, that the laryngologist very often in removing pieces of the laryngeal growth for microscopical examination, did not cut deeply enough into the growth, so that the laboratory examination might not show malignancy. It is well known of course that a laryngeal growth would not show malignancy if only a small piece is examined, and still be malignant. For that reason I also stated (P. 917), "that in such doubtful cases it would seem best to depend upon the naked eye diagnosis of cancer."

There is an error on page 914 that I wish to correct. The word papillomatous should be substituted for inflammatory.

At the time my paper was published I did not have the written report from the laboratory. It is as follows:

Specimen.—Pieces removed from a laryngeal growth. The growth is confined to the left vocal cord ("purely intrinsic"). Specimen consists of three small pieces of soft tissue, irregular in shape and of whitish gray color.

Microscopic Description.—Sections show a poorly staining dense fibrous tissue, the surface of which is thrown into folds, and is covered by several layers of epithelial cells. These cells do not invade the deeper tissues.

Microscopic Diagnosis.—Papilloma.

Note.—While the tissue examined shows no evidence of malignancy it is well to remember that we have merely the surface of the growth and that a deeper section might show carcinoma.

Papillary tumors of the larynx should always be viewed with suspicion as they usually becomes malignant sooner or later. R. M. P.

I am glad to take this opportunity to clear up any misunderstanding that may have existed in this matter.

CLEMENT F. THEISEN.

November 15th, 1907.

Editorial

Historians have left a vivid picture of the horrors of this fearful visitation, which show us that the terror it inspired disturbed the fabric of society. Strange superstitions pre-occupied men's minds, and annihilated every sense of duty. Some appeared to be urged by a demoniacal impulse to commit heinous but useless crime, with the widest recklessness. Small crosses of unctuous matter were supposed to appear suddenly, traced by an invisible hand on the clothes of persons as they were engaged in their ordinary pursuits; examples were narrated of their having appeared suddenly visible to the eyes of the assembled congregation on the vestments of the priest as he officiated at the altar. The individual thus marked out was invariably assailed by the disease on his return home, and soon died. Crosses were constantly found traced on the doors and outer walls of buildings; houses, palaces, huts, and monasteries were alike marked. This was considered as an intimation that some of the inmates were ordered to prepare for immediate death. In the delirium of fear and the first paroxysms of the plague, many declared that they beheld hideous spectres wandering about; these apparitions were seen flitting through the crowded streets of the city at times questioning the passengers, at times walking into houses before the inmates, and then driving the proprietors from the door. At times it was said that these spectres had even attacked citizens with naked swords. That these things were not reported solely on the delusion of the fancy of persons rendered insane by attacks of disease is asserted.

History of the Byzantine Empire.

GEORGE FINLAY.



Tuberculosis That tuberculosis causes more deaths than any
Classes other disease is a fact that has long been recognized
by the medical profession and is one which the
general public also are now beginning to appreciate. That it is
a curable disease if taken in hand at a sufficiently early stage
and properly treated also meets with general acceptance. It is
unnecessary for us to point out in this place that starting from
these premises great efforts are being made throughout the
country at large, and throughout the world, to combat this
scourge. Heretofore Albany has been rather behind the times
in its efforts in this direction. It is true that we had here at

one time an anti-tuberculosis association, and Pine Tree Camp was also a well-directed effort towards ameliorating the unhappy condition of some victims, but through misfortune and lack of interest among the citizens at large, and we are afraid among the physicians also, both these movements seem to have come to an untimely end.

The Albany Guild for the Care of the Sick, ever ready and anxious to do what it can for the lessening of suffering and to extend its usefulness, has recently entered the field made vacant by the collapse of the former movements. The work to which it has applied itself has been begun quietly and unostentatiously, as is usual with the Guild, but it is hoped that once begun it will grow rapidly. It certainly should, but here, as in its other departments, it needs the active support of the physicians and other citizens of Albany.

Appreciating the fact that tuberculosis is more prevalent among the poor and those living under bad hygienic conditions, and that these are the people who are least able to properly care for themselves at home and least able to go away to sanatoria, the Tuberculosis Department of the Guild has adopted the "House Sanitarium" or "Tuberculosis Class" method as best reaching the needs of these people. This method, which is an adaptation of principles long used by Dr. C. L. Minor of Asheville, in the extra-mural treatment of private patients, was first applied by Dr. Joseph H. Pratt, of Boston, to the management of dispensary patients in the Spring of 1905. In brief, it is merely the application to patients in their homes of the sanitarium regime of absolute rest, fresh air day and night, and abundant food.

Absolute rest is insisted upon, especially at first when fever is present, and this is taken in the open air on a porch or balcony, or in a tent on the roof or in the yard. When the patients are so situated that they have no porch, and are unable to provide themselves with a tent, means will be provided entirely or in part by the Guild to meet the deficiency. In addition to the tent, a cot bed, reclining chair and blankets are provided. Diary note books are also given the patients in order that they may keep a personal record of pulse, temperature, diet and general subjective condition. They will receive daily visits from one of the Guild nurses, and once a week will meet the physicians in charge in the Guild House. At these meetings the record books are inspected, progress noted, directions given and a general conference held for instruction and mutual help. At suitable

intervals physical and sputum examinations are made, and the weight is recorded weekly. In case the patients are unable to make the exertion needed for this weekly visit, the physicians will go to them.

The results obtained by Pratt in his work in Boston are extremely satisfactory. In his last paper he reports upon thirty-seven patients who have been connected with the Emmanuel Church Tuberculosis Class at some time since its organization (fifteen other patients are at present under treatment). Of these thirteen were advanced cases; of these three have recovered, seven have died, two were discharged for disobedience and one is now too ill to attend. Of twenty-four incipient or moderately advanced cases, eighteen or seventy-five per cent. have recovered (twelve apparently cured and six have had the disease arrested). Of the remaining six, two voluntarily left the class against advice, but both much improved. It is to be noted here that of nine incipient cases, seven were apparently cured and two had the disease arrested. The average gain in weight of the discharged patients was twenty-five and two-tenths pounds; the greatest gain was sixty pounds. Eight of them have been at work twenty weeks or over and in none has the disease recurred.

Similar results have also been had in other classes which have been more recently started in Boston and elsewhere. Last Spring a class was started in Troy by "The Society for the Home Treatment of Consumption in Troy" under the management of Dr. H. W. Carey. Very satisfactory progress has already been made though it is too early to speak of permanent results. All of the patients except some very advanced ones have shown improvement and one has gained about twenty-five pounds in weight.

What has been done elsewhere can be done in Albany, in fact the situation here is particularly full of promise. The Guild has ministered to the wants of the poor for over ten years and is consequently fully organized and has an efficient staff of visiting nurses. The new work will require no new organization and there will be no search for proper visitors, but everything will proceed in an orderly fashion as merely an extension of its work along new lines. The citizens of Albany may well be congratulated that this very useful organization can be so easily adapted to any need of charity. It is to be hoped that the physicians of the community will encourage the work and help along the good cause by referring suitable cases to the class.

CHARLES K. WINNE, JR.

Little Biographies

XXIV. WINSLOW.

JACQUES (JACOB) BENIGNUS WINSLOW, was born at Odensee, Denmark, in 1679 (Mayne) ; in 1669 (Baas) ; he died in Paris, in 1760. Winslow is best known by the foramen of Winslow, although his most noticed work during his life was on the action of muscles. His father was a Lutheran minister, and young Winslow was destined to enter ecclesiastical work, but like Boerhaave, under similar conditions, he willed to take up the study of medicine instead. He pursued his early studies with Borrich. In 1697, he traveled to Holland and to France. It was near the close of Louis XIV's reign and the monarch was expending all his energies in trying to reclaim Protestants to Catholicism. The conversion of a heretic was held as important as the conquest of a province and was celebrated as such.

In 1699, Winslow renounced his Lutherism and embraced the king's religion. Although there is reason to believe that his conversion was sincere, his change of belief undoubtedly facilitated his medical advancement. The illustrious Bishop of Meaux acted as his godfather and watched over the young student's professional progress. He was admitted to the study of medicine without examination, and allowed to attend all of the courses of study without charge. Having received his degree of doctor from the Faculty of Medicine of Paris, in 1707, he became a member of the Academy of Sciences, interpreter of Danish to the Library, and at the death of Hunalt, the king called Winslow to the chair of anatomy and physiology in the Faculty of Paris. His ability justified his rapid promotion.

He was fortunate in being associated with another anatomist, Duverny, and also in being the grand-nephew of Stenson. In 1732, appeared his "Exposition anatomique du corps humain," in which he called attention to the fact that each muscle has a "fixed point," and also that the simplest movement is the result of the cooperative action of many muscles rather than the result of the contraction of one ; for instance, if a man were lying on his back and should sit up, almost every muscle in the body from the head to the sole of the foot would contribute to the movement.

Winslow entered into a dispute with Lemery concerning the etiology of monstrosities ; Lemery advancing the theory that

monstrosities were formed by the union of two "germs," while Winslow believed that monstrosities came from a single "germ." Both champions continued to publish arguments to establish their claim up to the time of their deaths. Early in life Winslow had two narrow escapes from being buried alive, and in 1742, he published two volumes on "*l'incertitude des signes de la mort*," coming to the conclusion that the only incontestable signs of death are phenomena of putrefaction.

In the beginning of the eighteenth century, anatomy was a specialty, in which the regular practitioner was not well trained, consequently it was the usual custom to call an anatomist to examine the patient and particularly, to examine the seat of disease. As a consultant Winslow was in great demand. It is a matter of common report that Winslow was a timid therapist, although the story that he trembled at the thought of administering two ounces of manna to a patient in twenty-four hours, is probably an exaggeration. Certain it is that he had a lofty conception of the dignity of the anatomist, and he considered the use of drugs perilous. From a surgical standpoint he prepared treatises on "*An Easy and Safe Method of Exploring the Abdomen*," "*The Reduction of Hernias*," etc.

His work on anatomy exhausted several editions and for many years was regarded as a classic, being translated into Latin, Italian, English and German. His complete works are among the "*Memoirs de l'Academie des sciences*." Winslow died in 1760.

A. HOLDING.

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Scientific Review

TUBERCULIN.

PRESENT VIEWS AS TO ITS VALUE IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS.

Since Koch's announcement in 1890 of his discovery of the therapeutic properties of a substance which he had prepared from cultures of the tubercle bacillus, opinions as to the value of tuberculin have been most varied. At first accepted almost universally as a sure cure for consumption, it was soon found to have decided limitations and fell into discredit. Only recently has it come again into more general favor.

The events attending its first use were most dramatic. High hopes were raised that were quickly replaced by disappointment. The remedy was misunderstood and carelessly handled by many, who thereupon condemned it, while others clung to a belief in its efficacy. It may be of interest to briefly review some of the circumstances.

In the early eighties bacteriology was already an active branch of medicine and attempts to produce artificial immunity to disease were being made. Charrin¹ in 1882 rendered animals immune to a form of septicaemia by injecting sterilized cultures of the germ found in the discharges. Brieger and Fraenkel² in 1886 reported that the filtered culture fluid of the diphtheria bacillus rendered guinea pigs insusceptible to inoculations with diphtheria bacilli.

Koch had been pursuing studies along similar lines. At the Tenth International Medical Congress held in Berlin in August, 1890, he delivered an address on "Bacteriological Research"³ in which he stated that he had found a substance derived from the tubercle bacillus which rendered guinea pigs immune to tuberculosis, and stopped the progress of the disease in animals already suffering from it. This statement naturally aroused considerable interest though it related only to animal experiments.

About November 15th of the same year he published⁴ "A Further Communication on a Remedy for Tuberculosis," in which he claimed that incipient pulmonary tuberculosis in man could be with certainty diagnosed and cured by this means and advanced cases could be benefited. The preparation and nature of the substance was not explained though the method of using it was described.

It was well known that for a whole decade Koch had been experimenting with the tubercle bacillus and when this announcement was made the whole profession was in the mental attitude of being ready to accept the remedy.

The excitement following was intense.⁵ Not only the medical but the lay press spread the news far and wide. The hopes aroused by the reports of a real cure for consumption in "Koch's lymph" were most alluring, as we all remember. Medical men from everywhere flocked to Berlin; 1500 arrived within a week after the publication of his paper. One of Koch's assistants was obliged to open no less than eight temporary consulting rooms in different parts of the city, and these were thronged day and night by rich and poor demanding the new treatment. The use of the remedy became widespread throughout Europe. In England public demonstrations were given in the London Hospitals by Heron and Watson Cheyne. At this period it was sent out in bottles labeled "tuberculin" and consisted of a rather viscid, transparent, brownish fluid, the composition being still held secret.

In January, 1891, however, Koch published⁶ an account of the nature of tuberculin and its manner of preparation. The steps which led to the discovery were reviewed. The remedy which he defined as a glycerine extract of the tubercle bacillus, was obtained from pure cultivations of the tubercle bacillus. The active principle was a derivative of the albuminous bodies but differing from the toxalbumins. The extract contained also substances derived from the broth on which the bacilli had been grown, which were soluble in the glycerin. The active principle could be obtained nearly pure from the extract by precipitation with absolute alcohol, but in Koch's opinion the purified tuberculin had no special advantages. His view of the action of the remedy was that it helped the bacilli in the body to produce necrosis of the surrounding tissue. This necrotic tissue became a poor culture medium for the bacilli which consequently died and were removed with the sloughing necrosed tissue. Tuberculin contained, according to Koch, a certain amount of necrosis producing substance. A large dose would have a deleterious influence—even in healthy persons—perhaps on the white corpuscles, thus giving rise to fever and the other symptoms of a "reaction."

In tuberculous persons a much smaller quantity sufficed to cause at certain spots, that is, in the tuberculous lesions, a more or

less extended necrosis of cells with accompanying symptoms affecting the whole organism—"the tuberculin reaction." On account of its specific action on tuberculous tissue, the remedy could be "employed as a very delicate and certain reagent in searching out hidden and diagnosing doubtful tuberculous processes." He, however, laid little stress on its value for diagnosis, emphasizing rather its use as a remedy.

In his preceding article Koch had suggested that the local action of tuberculin could be best observed in cases where the tuberculous affection is visible, for instance, in lupus. Here, "after the subsidence of the preliminary swelling and decrease of redness, the lupus tissue is destroyed and later is sloughed off." The removal of necrosed tissue where the process was accessible might have to be assisted by surgical means. How similarly necrosed tissue was to be removed from more inaccessible situations, such as the lungs, was not made plain. As the general "reaction," consisting in rise of temperature with constitutional symptoms, was an accompaniment of the necrosis desired, no effort was made to avoid reactions. The remedy was to be given in increasing doses and was recommended for early rather than for advanced cases.

When Koch's second paper appeared the popularity of tuberculin was already waning. There were several reasons for this. In the first place Koch had been forced, it is said by the German government, to disclose his remedy before he had thoroughly determined its mode of action or had learned the proper method of administration, and the fact that he kept its composition secret aroused prejudice. The view of its action which he adopted led to the use of too large doses in order to produce the necrosis desired, and these were persisted in notwithstanding severe local and general reactions. Patients were kept in a constant feverish condition and soon succumbed. In one case eleven injections were given in eleven days in spite of reactions to 104° F.¹² The reaction was even considered a test as to whether the remedy was going to be effective. Tuberculin was extensively employed for several months, but in the meantime testimony as to the dangers connected with its use was accumulating.

Virchow's criticism was one of the causes of the general distrust which followed. About a week before Koch published his second paper, that is on January 7, 1891, Virchow made a report⁷ on about thirty autopsies upon patients who had died after re-

ceiving Koch's treatment. The main points he brought forward were, that the remedy produced not merely marked congestion but active inflammation, that fresh tubercles appeared, that the necrosis Koch described did not always take place, that while tubercles were at times broken down the bacilli which they contained were not killed, and that the effect of the injections might be to mobilize the bacilli and distribute them over the body.

Krause⁸ and others have shown that the assumption of Virchow, or rather of his pupils, that the eruption of tubercles occurred regularly during injections was unwarranted. The age of tubercles cannot be readily determined and it would be necessary to show that they arose subsequent to the administration of tuberculin if it should be held responsible for them. Similar appearances are found in autopsies on those who die of tuberculosis without having received tuberculin. Kossel,⁹ after a careful study of 800 cases, was convinced that the dissemination of tubercle bacilli into the general blood stream did not take place as a result of the use of tuberculin. It was not inconceivable that such a thing might occur if very high doses were given sufficient to cause severe local reaction in a focus all ready to break down, but it was likely that the breaking down of tissue and dissemination of bacilli would occur in such cases without it. Trudeau, Baldwin and Kinghorn,¹⁰ however, were not able to produce such dissemination, experimentally, in localized corneal tuberculosis. Virchow himself wrote¹¹ "I think we may now with certainty say that any process that can be brought about by tuberculin can also be brought about without that remedy, but," he added, "the course certainly often seems to be extravagantly hastened." It is an undoubted fact that disastrous results did follow bad selection of cases and improper dosage; it is, however,, also true that the same results follow the improper use of any poisonous drug.

The profession which at first had entertained such extravagant expectations and had demanded that the remedy should not only, as Pottenger¹² points out, cure tuberculosis, but remove the dead and decaying tissue of advanced cases; not only cure the disease but remove all results caused by the disease, now abandoned tuberculin. Many articles were published condemning the remedy by those who had but little experience with it. The use of tuberculin for diagnosis even, except in cattle, was discouraged. Only a few men still saw value in the remedy. These soon

came to the conclusion that in its administration much smaller doses should be used at the start and that severe reactions should be avoided.

Petrusky, Cornet, Gretschi, Turban and Krause, Moeller and others continued to use it abroad; Trudeau, Van Ruck and others persevered in its employment in America.

Except when employed in excessive doses it is not now believed to cause the necrotic changes described by Koch. In small doses there is probably slight local congestion, in larger doses there probably occurs more marked congestion, and if the action is more intense, an inflammatory reaction about the tuberculous lesions. When the remedy is used for some time, it is probable that it favors the formation about the enclosure of the lesions in fibrous tissue (Biedert,¹³ Trudeau¹⁴). It produces an antibody or antituberculin in the blood as demonstrated by Luedke.¹⁵ When given in gradually increasing doses a tolerance to large amounts is readily established.

KOCH'S PREPARATIONS.

Koch's original tuberculin was prepared by growing tubercle bacilli for six weeks, in meat broth or bouillon containing four or five per cent. glycerin. The culture was boiled or sterilized in an autoclave and evaporated to one-tenth its volume and filtered through a porcelain filter. In this way the micro-organisms were removed and a concentrated solution containing forty or fifty per cent. glycerin obtained, which consequently kept well. This is the preparation generally used for diagnosis.

Koch has since introduced various new forms of tuberculin and numerous modifications have been suggested by other workers. These will be considered in the discussion of the use of tuberculin for therapeutic purposes.

Diagnostic Use.

The tuberculin test, according to Cornet, Latham, Trudeau and others,^{16 17 18 19} should be reserved for cases in which other means of diagnosis have failed to settle the question whether tuberculosis is present or not. It should not be used until there has been careful study of the symptoms and physical signs as well as repeated thorough examinations of the sputum.

Contraindications.

According to Moeller¹⁸ these are elevated temperature, hemorrhage, heart disease, hysteria and epilepsy. Latham¹⁷ adds that signs of extensive disease should be absent. In fact in certain advanced cases the reaction cannot be obtained¹⁶ (this is explained by the development of immunity on account of repeated auto-inoculations). Brown's contraindications²⁴ are fever above 99.8°, recent hemoptysis nephritis, general glandular involvement, heart weakness or disease, epilepsy, hysteria, meningitis and possibly pregnancy.

Dosage.

Koch's original directions²¹ were to use one milligram for the first dose, then if no reaction was obtained to repeat the injection with a five milligram dose, to be followed in turn if negative with ten milligrams. This method has since been somewhat modified.

It is considered desirable to obtain the reaction with the smallest possible dose and many tuberculous patients react to smaller doses than one milligram.

Loewenstein²² suggested using a fifth of a milligram and repeating the same dose four or five times. The principle depends on the assumption that a reaction is due not so much to the dose employed as to the hypersensitiveness developed by the injection of repeated small doses, a well-known phenomenon of serum injections (anaphylaxis). When this method is employed reactions are sometimes obtained with descending doses of tuberculin. In one case reported by Hamman and Wolman²³ the patient reacted to the third injection, in a series of one, one-half and one-fifth of a milligram.

Objections to the use of small doses only are that many cases will fail to react which might have reacted to larger doses and also that although a few small injections repeated at proper intervals frequently develop a hypersensitiveness, too many repeated small doses may produce the opposite effect and render the patient immune to larger doses.

A method beginning with small doses but rapidly ascending to large doses if necessary seems more reasonable. The use of a large dose alone may cause an unnecessarily severe reaction. It is necessary to individualize the dose according to the patient.

In persons of a nervous temperament a preliminary injection of sterile water or diluting solution is helpful in excluding pseudo-reactions which sometimes occur in such individuals, accompanied even by slight rise in temperature.^{24 25} Lorenz,^{26 27} testing two hundred individuals, obtained reactions with "blank" solutions in thirty-nine per cent. of cases. If this source of error can be eliminated, he believes the diagnosis can safely be made if there is a rise of temperature of one-half degree C.

For persons who have had symptoms of recent date pointing to pulmonary tuberculosis or for neurasthenic persons, the following series has been suggested²⁵: .0001, .001, .002, .003 or .005 cubic centimeters. A final dose of .010 may be given if no reactions have occurred with the smaller doses.

For persons with a suspicious history but without recent febrile symptoms, also for joint, bone or skin cases: .0005, .001, .003, .005 or .008, .010 cubic centimeters.

For children under fifteen years, from one-half to one-tenth of adult doses.

Hamman and Wolman²³ suggest repeating .0002 cubic centimeters three or four times and then ascending rapidly to large doses as .001, .005, and .010 cubic centimeters.

Brown,²⁴ with a view to shortening the time taken by the test, which is always a period of anxiety for both physician and patient, recommends first a blank injection (sterile water or diluting fluid) then .0002, .001, .005, .010 cubic centimeters. It will be noted that the percentage increase between the first three doses is the same. It is rarely necessary to give more than two or three injections.

For two days before and after, as well as during the test, the temperature should be taken every two hours. It is not ordinarily necessary to record the temperature during the night when the test is given as late as eight P. M. There should be an interval of three or four days between the injections.

TECHNIQUE OF DILUTIONS.²⁵

For dilutions of filtered mixture of one-quarter per cent. carbolic acid in sterile normal salt solution (.07 per cent. NaCl.) is convenient. Fresh dilutions should be made at least once in two weeks because even the slight amount of carbolic acid present is sufficient to cause some coagulation of the tuberculin with

precipitation and weakening. The dilution is best made with sterile pipettes graduated to one-tenths of a centimeter. A convenient procedure for making dilutions without waste is as follows:

Dilution 1. 0.1 cubic centimeter stock tuberculin + 9.9 cubic centimeters diluent solution gives a solution of which 0.1 cubic centimeter = .001 cubic centimeter (gram) of tuberculin.

Dilution 2. 1 cubic centimeter of diluting fluid + 9 cubic centimeters of diluent gives a solution of which 0.1 cubic centimeter = .0001 cubic centimeter (gm.) of tuberculin.

Glass syringes which can be boiled should be used in giving the injections. A very convenient form with asbestos packing graduated in tenths and one hundredths of a centimeter, is manufactured. With these the measurement of the doses is much simplified.

In expelling the air after drawing the tuberculin into the syringe it should not be ejected carelessly.^{24 25} (Reactions have been caused by inhaling the spray.) If several patients are being injected simultaneously and a separate syringe is not used, the syringe should be carefully rinsed out a number of times with a sterile solution between injections.

Small doses, less than five-tenths of a cubic centimeter may be given on the outer aspect of the arm, but it is preferable to select the back of the shoulder or the lumbar region. The skin should be rubbed with alcohol. The needle is passed under the skin but not into the muscles. Sites of former injections should be avoided as should indurations of any kind on account of the likelihood of sterile abscess formation at such sites.^{24 25}

THE TUBERCULIN REACTION.

The occurrence of a reaction may become manifest by phenomena constituting:

The general or constitutional reaction consisting of elevation of temperature and other general symptoms.

Changes at the site of the tuberculous lesion (local reaction).

Changes at the site of injection.

General or Constitutional Reaction.

Moeller,¹⁸ Brown,²⁴ Latham¹⁷ and others consider an elevation of the temperature more than one degree as indication of a positive reaction.

It is important to remember that while a reaction may follow the injection within twelve hours it may be delayed for thirty-six to forty-eight hours²⁴. If no reaction occurs it is best to wait until three or four days after the first injection before giving the second. If there has been some slight elevation of temperature or other signs of a reaction it is advisable to repeat the dose. Koch himself²⁷ cautioned that if a patient showed ever so slight a tendency to react to a given dose of tuberculin, the same dose must be repeated before a larger dose is given. Even a smaller dose may be sufficient in such a case. Other constitutional symptoms such as headache, nausea, pain in the limbs, etc., may be severe though the elevation of temperature is slight. Circulation and secretion are accelerated. With a good sharp reaction the patient usually feels decidedly sick and miserable. On the other hand there may be decided elevation of temperature with only slight general symptoms.

Localizing Symptoms and Signs.

In the case of pulmonary tuberculosis there may be increase in cough and expectoration¹⁸ and tubercle bacilli have been found in the sputum during a reaction for the first time. In a relatively small proportion of cases physical signs in the lungs become more evident and the location of a lesion before in doubt may be definitely settled. Often, although a local reaction without doubt occurs, the lesion is so placed that we cannot detect it. The local reaction consists in increased vascularity of the parts with other phenomena due to moderate irritation. Hamman and Wilman²³ found changes in the physical signs in the lungs in six out of thirty cases to which tuberculin was given; Roepke,^{23 29} in forty-five per cent. of his cases.

The local reaction is very plainly seen in a cutaneous lesion such as lupus.^{4 18} Swelling and increased redness soon appear which subside as the intensity of the response to the toxin diminishes. In bone, joint and glandular tuberculosis there may be increased pain at the seat of disease.

At the *site of injection* there is frequently some redness and swelling. If aseptic technique is followed abscesses practically never occur;²⁴ sites of former injections should, however, be avoided, as should places where there is any thickening or induration beneath the skin; there have been instances of a sterile abscess following injection at such a point.

THE CUTANEOUS TEST.

Von Pirquet³⁰ showed in May, 1907, that at least in young infants the deposit of a drop of diluted tuberculin on the scarified cutaneous surface, might aid in the early diagnosis of surgical tuberculosis. If the patient is tuberculous the scarified area becomes reddened, oedematous, a papule like that of vaccinia appears. After some hours the reaction gradually subsides.

Later studies³¹ show that while there is a well-marked difference in the reaction between tuberculous and non-tuberculous children under two years of age, in older individuals and adults the difference is not constant.

Arloing, as a result of experiments on animals, comes to the conclusion that the cutaneous reaction is not constant. Vallee, however, whose experiments confirmed Von Pirquet's views, criticises Arloing's methods.

THE OPHTHALMO-TUBERCULIN TEST.

Calmette and Wolf-Eisner³² suggested independently the conjunctiva as a favorable site for the tuberculin test. Calmette's first communication was published June 19, 1907.³² According to his observations a marked hyperemia of the conjunctiva is produced in infected individuals as a result of placing a drop of diluted tuberculin in the eye. This is entirely absent or very slight in non-infected individuals. This hyperemia depends upon the susceptibility of all the tissues to tuberculin which is developed in infected individuals.

Calmette employs a tuberculin free from irritant substances, such as glycerine, beef extractives, etc., prepared by precipitating old tuberculin with ninety-five per cent. alcohol and dissolving the precipitate in sterile water. A drop of a one per cent. solution is placed in one eye of the patient. Within a few hours the tuberculous patients show very evident congestion of the palpebral conjunctiva. In some of the cases reported there was odema and purulent exudation. Changes were especially evident in the region of the caruncle. No pain was complained of but there was some slight discomfort and interference with vision on account of the abundance of the exudate. The reaction was positive in sixteen tuberculous cases and negative in nine non-

tuberculous cases. There were no constitutional reaction in any case. Calmette's later observations cover 321 tests. All subjects clinically tuberculous reacted. Several patients not thought to be tuberculous reacted, but were found on more careful examination to have lesions. A number of French, German and English articles have appeared confirming Calmette's results.

Baldwin³² has made a number of tests in this country. He employs purified tuberculin prepared by precipitation with ninety-five per cent. alcohol from Koch's old tuberculin. The precipitate is dissolved in normal salt solution. One-half per cent. and one-third per cent. solutions are used. The author considers a one per cent. solution too strong. Preparations from different lots of tuberculin vary in strength. The solution is kept in small glass tubes sealed at both ends and sterilized. A measured drop (.025 centimeter) is employed. Absolutely no fever or constitutional reaction has followed the severest eye reactions. The severest local discomfort is limited to photophobia, scratchy feeling, swelling and oedema of the lids with more or less secretion of tears and exudation of pus accompanying intense redness of the palpebral and ocular conjunctiva.

The majority of cases complain of no special discomfort. The irritation begins in from three to forty-eight hours and lasts two to three days. Perceptible redness of the caruncle and inner canthus may remain a week. The author suggests the following scheme for recording reactions.

Doubtful, slight difference with redness of caruncle.

1. Distinct palpebral redness with secretion.
2. Ocular and palpebral redness and secretion well marked.
3. Deep injection of entire conjunctiva with redness of lids and photophobia.

Contra-indications: The author believes the test should not be used when there is disease of the conjunctiva, eyelids or cornea, such as acute or chronic conjunctivitis, hay fever, blepharitis, ulcers, trachoma or when there is disease of the internal structures of the eye.

Undue exposure to dust, smoke or strong light during the test should be avoided.

The test was applied by Baldwin and his associates in 137 cases. Of these cases forty-five were already diagnosed as pulmonary

tuberculosis, twenty-six were suspected cases, fifty-seven were apparently healthy. Of the proved tuberculous cases two failed to react. One of these was a case of miliary tuberculosis and the other was a patient who had received a course of tuberculin treatment. One case of healed tuberculosis of seventeen years standing gave a doubtful reaction. Of the twenty-six suspected cases, fourteen failed to react. Of the fifty-seven apparently healthy cases, sixteen reacted, but in only two of these was a family history of tuberculosis or a history of exposure to infection lacking.

The test has the advantage over the subcutaneous test that it does not cause a constitutional reaction, and may be used in cases with fever. So far as present indications go it has nearly the same value and is subject to the same limitations. No value should be placed on a positive reaction in the absence of symptoms requiring treatment, nor should a negative result give rise to a false sense of security.

SIGNIFICANCE OF THE TUBERCULIN REACTION FOLLOWING SUBCUTANEOUS INJECTION.

If a typical reaction is obtained *it must be interpreted in the light of the other clinical evidence*. It is not a pathognomonic sign that the patient under consideration is in immediate need of treatment for pulmonary tuberculosis. The presence of tuberculosis anywhere in the body whether in bones, joints, glands, or in the interior of some organ, furnishes the conditions necessary for response to the test and a general reaction reveals merely the fact that there is somewhere in the body a tuberculous focus, not necessarily an active lesion, but possibly latent or healed.

Reactions from tuberculin have been reported as having occurred in a few cases of other diseases, particularly leprosy and syphilis.¹⁸ It has not, however, been satisfactorily shown by post-mortem evidence that there was no tuberculous lesion in the bodies of patients so reacting.

In nervous individuals a suggestive reaction may occur.²⁸ Errors from this source may be eliminated by the preliminary use of injections of sterile normal salt or other "blank" solutions.

The tuberculin reaction is a group reaction. A person suffering from infection with human tubercle bacilli reacts to tuberculins prepared from bovine or from avian tubercle bacilli. It is said¹⁸

that animals react to tuberculins prepared from other acid fast bacilli and phenomena similar to those of a tuberculin reaction may be produced in tuberculous subjects from the injection of other substances such as bouillon or peptone. Some of these reactions may be "suggestive" or "psychical." Healthy persons probably would react if doses of over 20 milligrams of tuberculin were used.²⁴

The occurrence of a tuberculin reaction is then not conclusive evidence *by itself* that the patient is suffering from tuberculosis in the sense that he needs treatment.

On the other hand there is no doubt that the reaction may fail to appear in advanced cases. This is a well-known fact in veterinary practice in the examination of suspected cattle.^{17 35} "There is, however, no proof as yet that tuberculin ever fails to give a reaction when the extent of the tuberculous lesion is limited, and in early cases the value of the reaction is very great." The value of the test is certainly comparable to that of the Widal reaction in typhoid fever.¹⁷

The greatest care should be used in the administration of tuberculin. In giving the test we are dealing with a substance the active principle of which is many times more powerful than that of most poisonous drugs, and the dose should be carefully selected for the individual patient.^{14 18 24 25} It is advisable that the patient rest the day before and after the test. Some physicians keep their patients in bed during this time.¹⁸ The greatest care should be exercised in preparing the dilutions and making the injections. The consensus of opinion is that with ordinary precautions harm is very rarely caused by a reaction. Moeller¹⁸ reports no serious accidents in 20,000 diagnostic and therapeutic injections. Kronig and others^{36 37} still hold that there is considerable danger of extension of the disease as a result of diagnostic reactions. He, however, confesses that he has had but little experience with the test. He emphasizes the fact that on account of the slow development of lesions it is only in rare cases that it is possible to determine whether or not the tuberculin reaction is harmless. Those who have had the most experience with the test are convinced that properly used it is a safe test, to be reserved, however, for cases in which other means of diagnosis fail. If not carefully used it may do harm.

The risks connected with its use have been compared to those attending anaesthetization.^{14 43} Very few would advocate abandoning the use of anaesthetics on account of the undoubted fact that dangers attend their administration, especially in unskilful hands.

TUBERCULIN THERAPY.

Besides Koch's original tuberculin, various modifications have been introduced by himself and other workers. These may be classified as follows:

1. Those containing toxins found in the media (usually meat broth) in which the tubercle bacillus has grown.

2. Those containing toxins obtained directly from the bodies of the bacilli.

3. Those containing both.

They all produce the tuberculin reaction.

He has since introduced several other preparations, all called tuberculin, but differentiated from one another by letters. Tuberculin A (tuberculinum alkalinum) is an obsolete preparation made by treating tubercle bacilli with decinormal soda solution and then filtering. Owing to the fact that its use gave rise to sterile abscesses it was soon discarded.

Tuberculin R³⁸ (T.R.) and Tuberculin O (T.O.) were described by Koch in 1897. They are prepared from virulent cultures of human tubercle bacilli. The bacilli are grown on a solid medium, dried, and ground to powder. The powder is then emulsified with sterile water and centrifugalized. The opalescent supernatant fluid is removed and constitutes T.O. (tuberculin oberer). It is probably closely allied to Koch's original tuberculin in its action. The centrifugalized deposit is dried and pounded, water is added, and the centrifugalization is repeated until scarcely any residue remains. The combined supernatant solutions (except the first T.O.) are mixed together and represent the "residual" tuberculin or Tuberculinum R. (tuberculin rückstand). It is preserved in twenty per cent. glycerine solution and is standardized to contain exactly ten milligrams of solid substance in each centimeter. This form of tuberculin is frequently employed for treatment, and contains elements derived from the bacilli. Koch later³⁹ advised the use of ground tubercle bacilli in emulsion. (Tuberkelbacillen-Emulsion, Bacillary Emulsion, B. E.) This preparation contains fifty per cent. glycerin. Other

"tuberculins" have been prepared by modifications of the methods mentioned above. Among the numerous modifications of Koch's tuberculin suggested by others, the following may be mentioned:

*Hunter's Modifications.*³⁹—These were found to have no special advantages over the old tuberculin and are not now widely used.

*Klebs' Preparations.*⁴⁰—Klebs came to the conclusion that there were in tuberculin two separate bodies, a tuberculocidal substance producing the beneficial effects, and another, causing inflammation, leucocytosis and necrosis. The harmful constituents, according to his view, are found in the bodies of the bacilli, while the *tuberkulozidin* (T.C.) is a secretion produced of the bacillus and is found in the culture fluid from which it may be precipitated with alcohol and bismuth. By a later method Klebs secures from the culture fluid by precipitation with sodium-bismuth, iodide, acetic acid and absolute alcohol product which he calls *anti-phthism* (A.T.). Favorable results are claimed from treatment with these preparations. Trudeau⁴⁰ found no bacteriocidal action from tuberkulozidin in vitro and no curative influence of A.T. on animals.

Oxytuberculin.—Hirschfelder prepared an *oxytuberculin*⁴¹ with hydrogen peroxide, on the theory that toxins are converted into antitoxins by oxidation, he believed that the favorable effect of a laparotomy on peritoneal tuberculosis was due to oxidation of the lesions by the incoming air.

B. F. (Denys).—Denys⁴² prepared a tuberculin by filtering glycerin bouillon cultures of the tubercle bacillus through a porcelain filter. The filtrate is germ free. The main difference between this product (B.F. Le bouillon filtré, Bacillus Filtrate) and Koch's original tuberculin is that no heat is used in the process of making. Denys believes that valuable toxic products are destroyed by heat. He claims for B.F. both antitoxic and antibacterial properties. The preparation contains one-quarter per cent. carbolic acid.

*Van Ruck's Watery Extract.*⁴³—The tubercle bacilli are filtered out of the rapidly growing and highly virulent culture. After washing with distilled water for the removal of the remains of the culture fluid they are dried in a vacuum dessicator. Next they are powdered in an agate mortar and then extracted with sulphuric ether. This extraction removes the fats. They are again dried and powdered as before and their further extraction takes place in sterilized distilled water, over a vacuum bath with a temperature

of 120 degrees F. The proteids becoming dissolved in the distilled water, the fluid is then decanted and filtered through porcelain, when finally the amount of proteids is determined and the preparation standardized to a certain per cent., marked local action.

Beraneck's Tuberculin.—Bouillon toxines which Beraneck⁴⁴ uses are produced by the tubercle bacilli, in a glycerin bouillon not peptonised or neutralized; it is then concentrated in vacuum to seven-tenths its volume, afterward precipitated with sixty per cent. alcohol. To this is added another phosphoric acid extract from the bodies of the bacilli. "My tuberculin," he says, "is formed of a mixture of equal parts of "toxins bouillon," T.B., and orthophosphoric acid extract, A.T. (one per cent. orthophosphoric acid and extracts from the body of the bacillus, an albuminoid substance representing six to eight per cent of the weight of the bacillus). This is diluted one-twentieth. He has not seen the marked congestive phenomena in guinea pigs following the injection of Koch's tuberculin when correspondingly larger doses of his tuberculin are used

Behring's⁵³ mystical and mysterious "*Tulase*" should also be mentioned.

These are only a few of the many modifications of Koch's original tuberculin. No one preparation has yet been proved to have a marked superiority over all the others. Their action is in many respects similar. Trudeau¹⁴ is not a partisan of any particular tuberculin. "We have much yet to learn about the production of tuberculous vaccines and their application in the treatment of disease. Time and experience alone can show us which tuberculin produces the best results." In his view, at present, whatever good results may be obtained depend quite as much upon the method used by the physician who administers the tuberculin, as upon the kind of tuberculin he administers. The method is of the utmost importance. Those who have used tuberculins most have been Spangler, Turban, Moeller, Denys, Petruschy, Goetz, Sahli and Wright abroad, and Trudeau and Von Ruck, Pottenger and others in America.

The main differences of opinion have been methods of administration and dosage. All try to avoid general reactions. The dosage is regulated by the majority in accordance with clinical symptoms. Wright's doses are regulated by determinations of the opsonic method. The method of regulating the dose by clinical symptoms employed at the Adirondack Cottage Sanitarium is simple and practical.²⁴

The patients are furnished little books in which they record daily any general symptoms which may appear under their proper heading, as well as localizing symptoms and those occurring at the site of injection. This careful watching of symptoms on the part of the patient has not been found to lead to morbid introspection, but rather to encouragement and interest. A copy of the record is made on a separate sheet to be filed with the patient's history. A separate record of the temperature is made.

CASE.....

No.....

THE ADIRONDACK COTTAGE SANITARIUM

REPORT ON DOSE OF TUBERCULIN

NAME.....

VARIETY OF TUBERCULIN.....DOSE.....

X Means present

O Means absent

DATE							
	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Mon.
AT SITE OF INJECTION							
Pain							
Severity							
Lean against or lie on it							
Swelling							
Headache							
Pain in limbs							
Pain in joints							
Malaise (general feeling of illness)							
Faintness							
Giddiness							
Insomnia							
Somnolence (sleepiness)							
Fatigue							
Restlessness							
Stimulation							
Strength: Increased							
" Decreased							
Appetite							
Indigestion							
Nausea							
Vomiting							
Temperature: Increased							
" Decreased							
Chilliness							
Cold sores (fever blisters)							
Rash							
Enlarged glands							
Pulse							
Weight							
Oppression in chest							
Cough: Increased							
" Decreased							
Expectoration: Increased							
" Decreased							
Pleurisy							
Shortness of breath							
In bed							
Exercise							

Injections are made twice a week, on Monday and Friday evenings at seven o'clock. Patients are expected to restrict their exercise on the day before and after the injection. When the records show any tendency toward a reaction, the dose should be reduced. Full doses should not be continued indefinitely for fear of exhausting the patient's power to form antibodies. It is better then to discontinue the treatment for from three to six months.⁴⁵

Gradually increasing doses are employed, beginning, for example, with .00000001 cubic centimeter B.F., and in the course of six or eight months increasing to one cubic centimeter.

Trudeau has used, among other preparations, O.T., T.R., Tuberkulol, Hunter's Modification B, Deny's B.F. and B.E. At present a combination of B.F. and B.E. in the proportion of two hundred of the first to one of the second is being used in his sanitarium.

At the Adirondack Cottage Sanitarium the increase in doses was at first by tenths of a centimeter (the various solutions used being each ten times stronger than the preceding). For example, if it is desired to begin with .000001 cubic centimeter, the first dose would be 0.1 cubic centimeter of a solution of which one cubic centimeter = .00001 grams; the second dose 0.2 cubic centimeter of same solution, and so on up to .00001 cubic centimeter. Instead of taking a full cubic centimeter of this solution, 0.1 cubic centimeter of the next higher is employed. It was found that reactions occurred more frequently between the earlier than between the later doses, e. g., between .000001 and .000002, than between .00009 and .00001. This is not strange when one considers that the percentage increase in the former case is one hundred per cent. and the latter only eleven per cent.

Brown²⁴ has recently adopted a much more practical logarithmic scale of doses, with the same percentage of increase between each dose. Different logarithmic series (see table) can be used according as it is desired that the increase be slow or rapid.

TABLE I.

2	3	4	5	6	7	8	9	10	11	12
1	1	1	1	1	1	1	1	1	1	1
3.2	2.2	1.8	1.6	1.5	1.4	1.3	1.3	1.3	1.2	1.2
10.	4.7	3.2	2.5	2.2	2	1.8	1.7	1.6	1.5	1.5
	10.	5.6	4.	3.2	2.7	2.4	2.2	2.	1.8	1.8
		10.	6.3	4.7	3.7	3.2	2.8	2.5	2.3	2.2
			10.	6.3	5.2	4.2	3.6	3.2	2.9	2.6
				10.	7.2	5.6	4.7	4.0	3.5	3.2
					10.	7.5	6.0	5.	4.3	3.8
						10.	7.7	6.3	5.3	4.7
							10.	8.	6.6	5.6
								10.	8.	6.8
									10.	8.3
										10.

Logarithmic scale for regulating therapeutic doses of tuberculin used at the Adirondack Cottage Sanitarium. A rapidly or slowly increasing series may be selected as desired.

For instance, if it is desired that there should be six injections from .000001 centimeter to .00001 centimeter, the doses would be .000001, .0000015, .0000022, .0000032, .0000047, .0000068 cubic centimeter.

When Wright's⁴⁶ method of giving tuberculin is used injections are regulated by determinations of the opsonic index. According to his view the smallest doses that will elicit a satisfactory response should be used. The dose should be repeated only while the effect of the preceding inoculation is passing. The dose should be increased only when it is clear that the dose previously employed is ceasing to evoke an immunizing response. He begins with dose corresponding to .000001 gram of the powdered tuberculin in T.R. and never goes beyond .000016 (1/100 milligrams). He recommends his method for localized tuberculosis in other situations than in the lungs. The consensus of opinion is ^{14 17} that the technique of making the opsonic test is so complex, the time and skill required so considerable, while sources of error are numerous, that it is not yet of any practical value as an aid in the tuberculin treatment of pulmonary tuberculosis. The results of Trudeau, Moeller, Van Ruck and others in regulating the dosage by clinical symptoms have been quite satisfactory. According to Latham, also quite as good results have been obtained by the use of tuberculin in accordance with clinical evidence, even in surgical tuberculosis, as when the doses have been regulated by the opsonic index.

The methods of preparing dilutions and of administering injections described in connection with the discussion of the use of tuberculin as a diagnostic agent, apply to its use in treatment and need not be repeated.

The contraindications are also similar. Brown²⁴ has not found the presence of slight fever a contraindication to tuberculin treatment. In fact B.F. has, in his experience, apparently had an antipyretic action.

Moderately advanced cases with temperature not above one hundred degrees, with good nutrition and no serious complications, are often given tuberculin treatment. Those who have failed to respond to hygienic treatment frequently improve apparently as a result of the injections.

Acute cases, according to Trudeau,¹⁴ should be treated by rest and the open-air method only. Patients who show pronounced intolerance to tuberculin are manifestly unsuitable for treatment.

Several considerations should influence physicians in deciding whether or not a remedy should be more widely used. First comes the question of clinical results. In interpreting these it is fair to ask: Has the treatment a rational basis, or is its use a purely empirical matter? If the clinical results are not absolutely convincing it may be in certain cases due to a wrong application of correct principles which should not be abandoned. If the treatment has a rational basis and clinical results warrant further trial, it is essential to know whether it can be safely used in private practice or requires the conveniences of a sanatorium or hospital.

Clinical reports have been favorable. As, however, nearly all the patients receiving tuberculin have also been under hygienic and dietetic treatment, it is somewhat difficult to say how much of the credit should be given to tuberculin.

Trudeau¹⁴ comparing five hundred cases treated by hygienic measures only, which were also treated with tuberculin, finds a balance of sixteen per cent. in favor of the later. Brown⁵² reports favorable results in the same institution.

Pottenger,^{12 20 48} basing an opinion on the results of the treatment of 1,200 first-stage cases by Van Ruck, himself and others, 611 of which were treated by hygienic measures and 581 by the same careful management plus tuberculin and allied products, found that twenty per cent. more of the later were cured. Van

Ruck⁴³ reports favorable results in 3,349 cases treated. Denys,⁴² Sahli,⁴⁷ Moeller¹⁸ and others also report favorable results.

The question arises, are the toxins found in tuberculin those actually produced in the body by the tubercle bacillus?

Marmorek⁵⁴ claims that tuberculin is only a product of degenerate bacilli grown under artificial conditions and that it is not produced in the body at all. The true toxins of the disease, he believes, may be obtained from young bacilli growing on a special medium which he has derived, and these he employs in producing his serum.

Granting that tuberculin is formed in the body by the tubercle bacillus, what is the advantage of introducing into a body already suffering from the effects of poisonous products, more substances of the same nature? This question naturally arises when vaccination against any infection is to be considered. Wright's⁴⁶ theory is that the auto-vaccinations or auto-inoculations produced in the natural course of the disease are irregular and illtimed, and experience shows they are insufficient to effect a cure. In afebrile and especially in surgical tuberculosis under natural conditions, the stimulation of the production of antibodies takes place mainly at the seat of the lesion. When vaccination is employed, the cells of the entire body are stimulated to share in the antitoxin production.

Theoretically, then, the present use of tuberculin is a form of vaccination in the sense given to the term by recent students of immunity. By the injection of toxins formed by the infecting organism the body is stimulated to produce its own antitoxin and other antibodies. Whatever immunity is brought about is thus *active* immunity, and therefore more valuable and lasting than the *passive* immunity conferred by the introduction into the body of ready-made antitoxins. Whatever immunity is produced by the use of *antitoxic* sera, such as Marmorek's and Maraghano's, is *passive*. Large amounts injected over a long period of time are necessary. According to Theobald Smith⁴⁹ the repeated injection of large quantities of foreign serum through a long period of time is not to be looked upon lightly. His studies and the recent studies of Rosenau⁵⁰ and others on hypersusceptibility and anaphylaxis are of especial interest in this connection. The repeated administration of diphtheria antitoxin clinically has never, so far as known, produced any harmful results. On the other hand, Pearce and Pease⁵¹ have shown that repeated injec-

tions in horses of toxins of various organisms for the purpose of producing *active* immunity, are at times followed by serious consequences, such as venous thrombosis and necroses. No such sequelae from the use of tuberculin have been reported.

That tuberculin does produce an active immunity (to tuberculin) is shown by the fact that patients come gradually to tolerate doses many times as large as those which at first would have caused serious symptoms. That the body as a result of the injections does actually produce an antitoxin, found in the neighborhood of the lesion and also in the blood, is shown by Luedke's¹⁵ studies. He and others have demonstrated an antibody to tuberculin (antituberculin) in these situations.

Practically all that we certainly know as to the result of tuberculin treatment is that it causes an immunity, more or less permanent, to toxins produced in cultures by the tubercle bacillus. Clinical results indicate that this is an advantage to the patient and gives him one more weapon in his fight against the disease. Complete immunity to fresh infection is not produced. Animal experiments have shown that the only really effective immunity against the bacilli is brought about artificially only as the result of injections or vaccination with the living organisms.⁴⁵ That the tuberculin treatment can be safely given is shown by the experience of many, for example, Moeller, who has given 20,000 injections without any serious accident. That occasionally serious events should closely follow the administration of tuberculin and be attributed to its use is inevitable, even though they be mere coincidences. Moeller¹⁸ and Brown²⁴ give several examples of such occurrences, when it had been the intention to administer tuberculin but the injection had been postponed for one reason or another. It is perhaps an advantage to the patient to be able to attribute some of his unpleasant symptoms to tuberculin rather than to tuberculosis. He is then at least not depressed with the thought that his disease is progressing.

In view of the fact that clinical reports are favorable, the use of the remedy has some rational basis, does not appear to be more dangerous than other powerful medical agents, and can apparently be safely administered by any competent physician, the attitude taken by Lennox Brown, in 1891, is a reasonable one for the profession to-day. "I trust also that it will be admitted that the results already obtained by the remedy are such as

warrant us to persevere in its employment provided, always, that *due caution be exercised* not only in the selection of patients for its application but also in every detail of its administration."

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Public Health

Edited by Joseph D. Craig, M. D.

DEPARTMENT OF HEALTH—ALBANY, N. Y.

ABSTRACT OF VITAL STATISTICS FOR OCTOBER, 1907.

Deaths.

	1902	1903	1904	1905	1906	1907
Consumption	26	16	21	20	16	19
Typhoid Fever	0	3	0	2	0	2
Scarlet Fever	0	1	0	0	0	1
Measles	0	0	0	0	0	0
Whooping-cough	2	0	0	0	0	1
Diphtheria and croup..	4	0	0	4	1	3
Grippe	0	2	0	0	0	0
Diarrheal diseases.....	5	7	3	4	5	1
Pneumonia	9	7	12	7	5	12
Broncho-pneumonia	0	0	0	8	0	0
Bright's disease.....	11	12	15	8	18	14
Apoplexy	10	14	2	14	11	9
Cancer	8	7	9	4	7	6
Accidents and violence..	7	8	9	3	13	6
Deaths over seventy yrs.	16	26	23	17	33	24
Deaths under one year..	9	14	18	17	12	9
Total deaths.....	136	137	136	135	141	147
Death rate.....	16.00	16.12	16.00	15.88	16.59	17.30
Death rate less non-residents	14.35	14.35	14.83	13.65	14.35	15.65

Deaths in Institutions

	1902		1903		1904		1905		1906		1907	
	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident	Resident	Non-Resident
Albany Hospital	7	6	10	10	8	8	8	7	9	9	15	4
Albany Orphan Asylum.	1	1	3	0	1	0	1	2	0	0	0	0
County House	2	2	3	0	4	1	2	2	1	0	1	2
Homeopathic Hospital ..	2	0	0	0	2	0	2	0	1	0	1	0
House of Shelter.....	1	0	0	0	1	0	0	0	0	0	0	1
Home for the Friendless	0	0	2	1	0	0	0	0	0	0	1	0
Little Sisters of the Poor	2	0	0	0	0	0	0	0	1	0	0	1
Child's Hospital.....	0	0	0	0	0	0	0	0	0	1	0	1
Public Places	0	3	0	2	0	0	0	0	1	6	1	1
St. Frances De Sayles												
Orphan Asylum	0	0	0	0	0	0	0	0	1	0	1	0
St. Margaret's Home...	0	0	1	1	3	1	6	5	0	1	0	1
St. Peter's Hospital....	2	1	0	1	1	0	2	2	5	2	7	3
Sacred Heart Convent..	0	0	1	0	0	0	0	0	0	0	0	0
Births											106	
Marriages											83	
Still births.....											6	
Premature births											1	

BUREAU OF PLUMBING, DRAINAGE AND VENTILATION.

In the Bureau of Plumbing, Drainage and Ventilation, there were one hundred and eighty-six inspections made, of which one hundred and seven were old buildings and seventy-nine new buildings. There were fifty-eight iron drains laid, thirty-six connections to street sewers, thirty-nine tile drains, two urinals, five latrines, twenty-nine cesspools, sixty-three wash basins, fifty-three sinks, fifty-four bath-tubs, thirty-three wash trays, one butlers' pantry sink, six trap hoppers in yard, eighty-two tank closets, four slop hoppers. There were one hundred and nineteen permits issued, of which ninety-one were for plumbing and twenty-eight for building purposes. There were thirty-six plans submitted, of which thirteen were of old buildings and twenty-three were of new buildings. Four houses were tested on complaint, two with blue, red and two with peppermint, and there were fifteen water tests made. Thirty-eight houses were examined on complaint and seventy-one were re-examined. Twenty complaints were found to be valid and eighteen without cause.

BUREAU OF CONTAGIOUS DISEASE.

Cases Reported.

	1902	1903	1904	1905	1906	1907
Typhoid fever	13	3	9	10	3	10
Scarlet fever	7	5	2	22	10	6
Diphtheria and croup...	50	24	9	24	20	39
Chickenpox	8	3	1	0	0	1
Measles	0	4	4	0	3	2
Whooping-cough	0	0	1	0	0	0
Consumption	0	0	1	4	0	22
Totals	87	39	27	60	36	80

Contagious Disease in Relation to Public Schools.

	Reported D. S. F.
Public School No. 1.....	2
Public School No. 2.....	1
Public School No. 3.....	1
Public School No. 4.....	1
Public School No. 6.....	1
Public School No. 7.....	1
Public School No. 8.....	1
Public School No. 14.....	1
Public School No. 15.....	8
Public School No. 22.....	2
St. John's Academy.....	3

Number of days quarantine for diphtheria:

Longest..... 66 Shortest..... 4 Average..... 19 1-35

Number of days quarantine for scarlet fever:

Longest..... 32 Shortest..... 8 Average..... 18

Fumigations:

Houses..... 43 Rooms..... 131

Cases of diphtheria reported..... 39

Cases of diphtheria in which antitoxin was used..... 38

Cases in which antitoxin was not used..... 1

Deaths after use of antitoxin..... 3

BUREAU OF PATHOLOGY.

Bender Laboratory Report on Diphtheria.

	1902	1903	1904	1905	1906	1907
Initial positive	52	38	9	17	13	28
Initial negative	40	30	14	29	38	38
Release positive	33	60	2	8	1	33
Release negative	21	53	5	12	19	57
Failed	10	5	0	0	13	19
Totals	156	186	30	66	84	175

Test of sputum for tuberculosis:

Initial positive	4
Initial negative	13

MISCELLANEOUS.

Inspections of mercantile establishments.....	0
Mercantile certificates issued to children.....	30
Factory certificates issued to children.....	22
Children's birth records on file.....	52
Number of written complaints of nuisances.....	52
Privy vaults	5
Plumbing	8
Other miscellaneous complaints	39
Total number of dead animals removed.....	481
Cases assigned to health physicians.....	57
Calls made	204

Society Proceedings

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

The semi-annual meeting of the Medical Society of the County of Albany was held in the Alumni Hall of the Albany Medical College, on Wednesday evening, October 9th. The meeting was called to order by the President, Dr. G. G. Lempe. The following members were present: Drs. Applebee, Archambault, Babcock, Ball, Bedell, Bendell, Blatner, Classen, Conway, Curtis, De Voe, W. H. George, Gutmann, Hacker, Hinman, Jenkins, Lanahan, Lempe, Lewi, Lipes, Lomax, Macdonald, MacFarlane, Mereness, C. H. Moore, Moston, Neuman, D. V. O'Leary, Jr., G. W. Papen, G. W. Papen, Jr., Rooney, Rulison, Shaw, Stevenson, A. Vander Veer, E. A. Vander Veer, J. N. Vander Veer, Ward.

Dr. SHAW moved that the minutes of the last regular meeting, as printed in the ALBANY MEDICAL ANNALS, be adopted. Seconded and carried.

Dr. CURTIS reported that the Board of Censors had considered the names of the men that appeared on the program.

It was moved and seconded that the Secretary cast one ballot for the names presented. Carried.

The Secretary cast one ballot, and the President announced Drs. Tiffany Lawyer, Edwin L. Draper, Richard A. Lawrence, Walter A. Reynolds, Percival W. Harrig, Jerome Meyers, Erastus Corning, of Albany; Wallace E. Deitz, of Berne; Eugene I. Honratta, of Watervliet, and Elmer E. Finch, of Schodack Center, members of the Society.

The Vice-President, Dr. HOWARD A. LOMAX, delivered an address entitled "The Right Upper Abdominal Quadrant."

At the conclusion of Dr. Lomax' address, Dr. WARD moved that the thanks of the Society be extended to Dr. Lomax for his excellent paper. Seconded by Dr. A. Vander Veer. Carried.

Dr. WARD then spoke of the difficulty of inducing patients to follow the outline of treatment laid down for them, and of the difficulty of making differential diagnosis by examination of the stools. He also spoke of the advisability of surgical intervention, saying that surgery could do more than anything else for the relief of the patient, even to the removal of a large portion of the stomach.

Dr. NEUMAN said that the paper was an exceedingly interesting and exceedingly valuable one, as it brought out many important facts. He then said that the question of early recognition of carcinoma of the stomach was a very important one, and that every physician ought to carefully consider the possibility of this condition in every patient over forty years of age, if the digestive activities have been carried on normally and very suddenly certain gastric disturbances present. He spoke of the benefits to be derived from surgery, saying that we spent too much time in treatment to find out some means whereby we could alleviate the condition, which could be more easily done if the case was turned over for surgical treatment.

Dr. MACFARLANE said that he felt as if he had banquetted at a large feast and had banquetted too well; that Dr. Lomax had given the Society enough for an entire winter's work. He gave an interesting description of an ingenious method for making early diagnosis of pancreatic diseases. Dr. MacFarlane then spoke of having seen patients with enormous cancers of the stomach, which were only discovered at post mortem.

Dr. VANDER VEER said that he felt particularly grateful to Dr. Lomax for his able paper and for having compiled such a fund of knowledge therein. He spoke of the liability of infection of the gall-bladder from the bacilli of typhoid. He cited a case which presented all the symptoms of appendicitis, which eventually proved to be typhoid fever, and in which still later on Dr. Neuman discovered a condition of the gall-bladder. Dr. Vander Veer said that this case belonged to a class of cases on which Dr. Asher of Philadelphia had been working for a great number of years. After discussing several cases of duodenal ulcer, Dr. Vander Veer concluded by saying that he thought Dr. Lomax' paper was the best that had been presented to the Society in years.

Dr. ROONEY spoke of two cases that were brought into the hospital within a short time of each other, presenting all the symptoms of typhoid fever and infection of the gall-bladder. Both died within a few hours of each other, and autopsy revealed that both had been suffering from duodenal ulcer.

Dr. RULISON corroborated this statement of Dr. Rooney, saying that one case presented all the symptoms of appendicitis-temperature, some pain in the region of the epigastrium and later over McBirney's point. The other case had vomiting and diarrhoea, normal pulse and temperature.

Dr. MACDONALD congratulated Dr. Lomax upon the excellence of his paper, saying that it appealed to him all the more because of the fact that it was written by a general practitioner of medicine who goes about

from day to day seeing all sorts of patients suffering from all sorts of diseases. He said that every man who has to do with the healing of disease must first of all be a physician; that the surgeon who merely makes incisions, opens and closes wounds and removes pathological conditions was merely a mechanic and not worthy of the estimation of the public. He spoke of the good that surgery had done. He wished to be classified as a general practitioner, saying that it is only the general practitioner who can know all about the conditions under discussion.

Dr. LOMAX thanked the members for their kind words, and, among other things, said that he thought the family physicians pay too much attention to the presence or absence of jaundice in gall-stones.

Dr. NEUMAN nominated Dr. Ward as a delegate to the Medical Society of the State of New York, moving that the Secretary cast one ballot. Seconded and carried.

The Secretary then cast one ballot, and the President declared Dr. Ward elected as a delegate to the State Society.

The Society then proceeded to elect a delegate to the Third District Branch.

Dr. MERENESS declined the nomination.

Drs. ROONEY and GUTMANN also withdrew.

Drs. WITBECK and MCGARRAHAN were then nominated.

The President appointed Drs. Gutmann and Rooney tellers.

After balloting the tellers announced the result of the ballot:

Dr. WITBECK received sixteen votes and Dr. McGarrahan thirteen.

The President thereupon declared Dr. Witbeck elected as delegate to the Third District Branch.

Dr. SHAW, Chairman of the Milk Committee, reported that the Committee was still active.

The President then read the following communication from the Medical Society of the County of Genesee.

BATAVIA, N. Y., July 19, 1907.

DR. A. T. LAIRD,

Secretary Medical Society, County of Albany,

588 Madison Avenue, Albany, N. Y.

DEAR DOCTOR:—During the past year the Medical Society of the County of Genesee has endeavored to secure State Legislation on two matters of importance to our profession. We are now trying to get concerted action on the part of all the County and District Branch Societies in the State and through them, action by the State Society.

The first of these two questions relates to the present "Garnishee Law." This law, as you know, provides that in case any person whose salary exceeds twelve dollars per week, fails to pay debts incurred for certain necessities, his creditors may compel his employer to hold back all wages in excess of twelve dollars per week and to apply this excess toward the payment of the indebtedness. Last year Justice Woodward of the Appellate Division of the Supreme Court handed down a decision in which he denies the right of the physician to collect his bill for professional services

under this act, on the ground that such services are not specifically mentioned. We hold that this law should be amended or a new act passed whereby a physician would have as much right as for instance the grocer, to collect his bill, under the provision of this act.

The second question is that of the prosecution of illegal practitioners. Every physician knows that an attempt to prosecute a person for illegal practice is considered by the public as an act of persecution and our motives are always misunderstood by the community in which we live.

Furthermore it is unjust to throw this work on the profession, since the prosecution of illegal practitioners is primarily an act of protection to the general public and not to the medical profession. For these reasons our Society in January, 1906:

"Resolved, That the Medical Society of the County of Genesee hereby requests the Chairman of the Legislative Committee of the Medical Society of the State of New York to consider the advisability of requesting the State through proper legislative enactment, to assume the responsibility and expense of prosecuting infringements of the medical laws in a similar manner to that assumed by the State in the prosecutions of violations of the excise laws, whenever information of such violations of the medical law is furnished by the president and secretary of a County Society."

In reply to this, Dr. Root, Chairman of the Legislative Committee, wrote me that this Committee could not take the initiative in the matter but suggested that the matter be brought up by our representatives at the regular meeting of the State Society.

Will you not have your society consider this matter and, if you see fit to do so, instruct your delegates to use their influence at the next meeting of the State Society?

Thanking you in advance for your co-operation, I am,

Fraternally yours,

(Signed) G. W. CORTIS,

Secretary Medical Society,
County of Genesee.

Dr. MACDONALD moved that this communication be referred to the Committee on Legislation. Seconded and carried.

Committee on Pavilion "F" reported progress and requested that the Committee be continued.

Motion made for continuation. Seconded and carried.

Dr. ROONEY, Secretary of the Committee on Medical Inspection of Schools, reported that the system had been put in force in the public schools and asked that the Committee be continued.

Motion to that effect made, seconded and carried.

Motion to adjourn made, seconded and carried.

ARTHUR J. BEDELL, *Secretary*.

GEORGE G. LEMPE, *President*.

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

A regular monthly meeting of the Medical Society of the County of Albany, was held Wednesday evening, October 30th, 1907, in the Albany Medical College. Meeting called to order at 8:30, Dr. Lempe presiding.

The following members were present: Drs. Adey, L. S. Archambault, Babcock, Barker, Bedell, A. J. Beilby, Blair, Blatner, Blessing, Classen, Cook, Cox, Craig, Curtis, Draper, Finch, W. H. George, Goewey, Gutmann, Hacker, Harrig, Holding, Jackson, Jenkins, Keens, Keough, Keigher, Lanahan, Lawrence, Lawyer, Le Brun, Lempe, Lipes, Lochner, Lomax, Macdonald, MacFarlane, McGarrahan, McHarg, Mitchell, C. H. Moore, Morrow, Meyers, Nellis, D. V. O'Leary, D. V. O'Leary, Jr., Reynolds, Rooney, Rulison, Ryan, Sampson, Shaw, J. N. Skillicorn, Stevenson, Traver, Trego, A. Vander Veer, J. N. Vander Veer, Van Slyke, Ward, Washburn, Winne.

Dr. CRAIG moved, in order that the Society might have more time to enjoy the scientific portion of the program, that the reading of the minutes, report of officers and committees, election of members, unfinished business and new business, be dispensed with. Seconded by Dr. A. Vander Veer. Carried.

HOLMES C. JACKSON, Ph. D., Professor of Physiological Chemistry, Albany Medical College, delivered an address on the "Physiological Function of the Peritoneum."

Dr. JOSEPH PRICE, of Philadelphia, Pa., delivered an address on "Dirty and Neglected Cases of Peritonitis."

Dr. A. VANDER VEER moved that both papers be discussed together. Seconded and carried.

Dr. MACDONALD congratulated Drs. Jackson and Price, and the Committee who had the meeting in charge, for the extremely valuable papers. He said that while the women in this city and vicinity might not be so handsome and so refined as the women of Philadelphia and the South, they never had such dirty abdomens as Dr. Price mentioned; that our men, unfortunately are not so handsome, and that our cooks are more careful, and therefore neglected and dirty cases of peritonitis are not common in Albany or hereabouts. When such cases do occur here, it is because of the patients not having been under the care of a physician and having been in bed for weeks, or where the physician has made one or two visits and has then been discharged, ten days later called in again and confronted with a condition of dirty abdomen. He said that the physicians in Albany are active in securing early consultation in cases of peritonitis. He has been in the practice of surgery for twenty years and does not remember to have seen a great number of deaths from gonorrheal peritonitis, and questioned whether, when the abdomen was opened and the respiratory movement produced a flow of dirty fluid, it is a case of gonorrheal infection. He said that he did not want to forget anything he had been taught in pathology or bacteriology and that every day it was necessary for him to know a little more. He does not think that there is much therapeutics in peritonitis before the operation but that after the operation there is a good deal of therapeutics. He contended that each

case must be treated individually. On one point he agreed with Dr. Price; namely, that when it is impossible to make complete removal of the pathological material from the abdomen it is wise to leave it open and drain it well. He also said that since he had stopped washing abdomens indiscriminately that his results were much more satisfactory.

Dr. WARD said that he well remembered the time when the surgeon did not dare to open the peritoneum. He deemed that surgery had done more along this line than had medicine. He spoke of the mistakes made in diagnosis. Dr. Ward then cited a case of a prisoner in the penitentiary during 1877 or 1878, who was serving a sentence of thirty years for making plates of U. S. Bonds. The prisoner had become insane and imagined that the other prisoners were putting up jobs on him, and he determined to end it all. So one day while at work in the shoe shop he managed to get a steel that was used under the arch of the shoe, sharpened it and took it to his cell. After the cells had been locked for the night he passed this improvised knife into his neck, just missing the carotid artery, leaving a gash two inches long. Then he plunged the knife into the peritoneal sac and the intestines gushed out. These he slit, letting the fecal matter out and cut the brachial artery. After this he pulled a dirty woolen blanket about him up to his neck and lay down to die. The next morning he was found in bed, which was flooded with blood. As a matter of common decency, Dr. Ward washed the fecal matter from the intestines, sewed up the wounds and had the man removed to the hospital. His temperature never went above one hundred and he made an excellent recovery.

Dr. A. VANDER VEER said that he agreed with the remarks of Dr. Macdonald in regard to the two papers, particularly in regard to the facts brought out by Dr. Jackson, which he said cleared up many things in regard to the peritoneal cavity. He would not attempt to say how many times he had opened the pelvis through the vagina for the relief of collections of pus. He believed that the gonococci preferred to live within the mucous membrane and that they remained there to a great extent. He spoke of the progress that had been made in surgery and how much less the mortality is to-day than it was before. He spoke of his experience with the wet and dry treatments, and of the posture employed by the late Dr. Fowler, saying that a large number of recoveries were due to the position of the patient. With reference to Dr. Price's remarks regarding cases of peritonitis caused by the introduction of foreign bodies into the peritoneal cavity through the wall of the vagina or the uterus, Dr. Vander Veer mentioned two cases which came under his personal observation.

Dr. PRICE said that he usually does not eviscerate, but that he does use irrigations when the abdomen is full of pus. He insisted that pelvic forms of peritonitis in many cases were simply gonorrheal infections; that gonorrheal infection of the female organ is very common indeed. He did not agree with what had been said about the benefits to be derived from Fowler's posture.

Dr. MACDONALD made motion to adjourn. Seconded and carried.

ARTHUR J. BEDELL, *Secretary*.

GEORGE G. LEMPE, *President*.

Medical News

Edited by Arthur J. Bedell, M. D.

THE ALBANY GUILD FOR THE CARE OF THE SICK.—STATISTICS FOR SEPTEMBER, 1907.—Number of new cases, 136;; classified as follows:: Dispensary patients receiving home care, 2; district cases reported by health physicians, 11; charity cases reported by other physicians, 59; old cases still under treatment, 63; moderate income patients, 64; total number of patients under nursing care during the month, 199. Classification of diseases (new cases), medical, 29; surgical, 10; gynaecological, 3; obstetrical, 45 mothers and 39 infants under professional care; dental, 5; transferred to hospitals, 4; deaths, 5; contagious diseases in medical list, 7.

Special Obstetrical Department.—Number of obstetricians in charge of cases, 2; medical students in attendance, 2; Guild nurses, 6; patients, 4; number of visits by head obstetrician, 3; by the medical students, 14; by the Guild nurses, 45; total number of visits for this department, 62.

Visits of Guild Nurses—(all departments): Number of visits with nursing treatment, 1,474; for professional supervision of convalescents, 185; total number of visits, 1,659; seven graduate nurses and three assistant nurses were on duty. Cases were reported to the Guild by 3 of the health physicians and by 36 other physicians and by 4 dentists.

STATISTICS FOR OCTOBER, 1907.—Number of new cases, 180, classified as follows: Dispensary patients receiving home care, 5; district cases reported by health physicians, 9; charity cases reported by other physicians, 115; moderate income patients, 51; old cases still under treatment, 81; total number of patients under nursing care during the month, 261. Classification of diseases (new cases): medical, 38; surgical, 13; gynecological, 2; obstetrical work of the Guild, 32 mothers and 33 infants; under professional care, dental, 4; eye and ear, 5; skin, 38; throat and nose, 9; contagious diseases, 6; removed to hospitals, 2; deaths, 14.

Special Obstetrical Department.—Number of obstetricians in charge of cases, 2; attending obstetrician, 1; students in attendance, 3; Guild nurses, 6; patients, 4; visits by head obstetrician, 2; by attending obstetrician, 2; by the medical students, 26; by the Guild nurses, 56; total number of visits for this department, 86.

Visits of Guild Nurses—(all departments): Number of visits with nursing treatment, 1,471; for professional supervision of convalescents, 243; total number of visits, 1,714. Cases were reported to the Guild by two of the health physicians and by 45 other physicians and 3 dentists. Eight graduate nurses and three assistant nurses were on duty.

SOUTH END DISPENSARY.—At the annual meeting of the trustees, held November 12, 1907, the following named staff was selected:

Consulting surgeons, Albert Vander Veer, M. D., Willis G. Macdonald, M. D., Charles E. Davis, M. D.; consulting physicians, Samuel Baldwin Ward, M. D., Leo H. Neuman, M. D.; consulting specialist in dermatology, Frederic Colton Curtis, M. D.; consulting physician in diseases of children, William H. Happel, M. D.; attending surgeons, William H. George,

M. D., George E. Beilby, M. D., John H. Gutmann, M. D., James N. Vander Veer, M. D.; attending physicians, Terence L. Carroll, M. D., James F. Rooney, M. D., Charles K. Winne, Jr., M. D., Daniel V. O'Leary, Jr., M. D.

Attending specialists—Eye and ear, Leo F. Adt, M. D., Arthur J. Bedell, M. D.; genito-urinary and skin diseases, Arthur Sautter, M. D., Joseph A. Lanahan, M. D.; throat and nose, Arthur G. Root, M. D., Louis Le Brun, M. D.; diseases of children, H. L. K. Shaw, M. D., Arthur T. Laird, M. D.; diseases of stomach and intestines, Leo H. Neuman, M. D., Branson De Voe, M. D.; gynecology, John A. Sampson, M. D.; diseases of the ear, Herman Bendell, M. D.; dental surgery, Leroy S. Blatner, D. D. S.; diseases of the nervous system, J. Montgomery Mosher, M. D., La Salle Archambault, M. D.; pathologist, Richard M. Pearce, M. D.,

ALBANY SCHOOL INSPECTION.—Early in October twenty physicians volunteered to visit one public school every morning between nine and ten o'clock. The teachers of the various schools have been given a letter of instruction, indicating the work of the physician as follows:

He will examine each case sent him by the teacher and determine the necessity for exclusion or treatment or both. All pupils will be referred to the family physician, or if poor to the district physician of their district or to a convenient dispensary for treatment; they will be given a duplicate of the card kept on file in the school they attend. No treatment to be given by Medical Inspector. This card will contain the name, age, sex, residence, nationality, date of entry, grade, and teachers' name, with the description of the conditions which the child evidences and which require attention. The file card *only* shall contain the diagnosis of the inspector of the school.

Diseases suggested for exclusion: Diphtheria, smallpox, tuberculosis, scarlet fever, chickenpox, trachoma, measles, mumps.

The following are tentatively suggested for exclusion: Pediculosis, ringworm, scabies (itch).

The following are causes for which teachers shall refer children to the inspector:

Unusual pallor; unusual dullness or sleepiness; red or discharging eyes; reddened or discharging ears; deafness; discharge from the nose; mouth-breathing; enlarged glands in the neck; swelling of the neck at angle of jaw; all skin eruptions; constant scratching of any part of the body; children who maintain peculiar postures at the desk; children showing defective vision of either or both eyes, children returning to school with excuse alleging illness and without note from attending physician; children returning to school or attending regularly and living at the same time in houses in which there is, or has recently been, illness; children asking frequent permission to go to the toilet.

THIRD DISTRICT BRANCH.—At the first annual meeting of the Third District Branch of the Medical Society of the State of New York, held at Albany, October 22, 1907, the following named officers for the ensuing year were elected: President, Dr. Hermon C. Gordinier, Troy; Vice-Presi-

dent, Dr. J. L. Archambault, Cohoes; Secretary, Dr. Henry L. K. Shaw. Albany; Treasurer, Dr. D. E. Connolly, Kingston. The next meeting will be held in Troy on the fourth Tuesday of October, 1908.

MEDICAL SOCIETY OF THE COUNTY OF GREENE.—At the annual meeting held at Cairo Village, the second Tuesday of October, the following named officers were elected: President, William A. Wasson; Vice-President, James B. Rouse; Secretary, Robert Selden; Treasurer, C. E. Willard; Chairman Committee on Public Health, A. W. Van Slyke; Chairman Committee on Legislation, Percy G. Waller; Delegate to State Medical society, Charles P. McCabe; Delegate to Third District Branch, Robert Selden.

NEW YORK SKIN AND CANCER HOSPITAL.—The Governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley will give a ninth series of Clinical Lectures on Diseases of the Skin, in the Out-Patient Hall of the hospital, Second Avenue, corner 19th street, on Wednesday afternoons from November 6th to December 18th, 1907, at 4:15 o'clock. The course will be free to the medical profession. William C. Witter, Chairman of Executive Committee.

THE AMERICAN NATIONAL RED CROSS.—The following resolutions were adopted by the Executive Committee of the American National Red Cross, October 18, 1907:

Whereas, By international agreement in the Treaty of Geneva, 1864, and the revised Treaty of Geneva, 1906, "the emblem of the Red Cross on a white ground and the words Red Cross or Geneva Cross" were adopted to designate the personnel protected by this Convention, and

Whereas, The Treaty further provides (Article 23) that "the emblem of the Red Cross on a white ground and the words Red Cross or Geneva Cross can only be used whether in time of peace or war, to protect or designate sanitary formations and establishments, the personnel and material protected by this Convention," and

Whereas, The American National Red Cross comes under the regulations of this Treaty according to Article 10, "volunteer aid societies, duly recognized and authorized by their respective Governments," such recognition and authority having been conferred upon the American National Red Cross in the Charter granted by Congress, January 5, 1905, Sec. 2, "The corporation hereby created is designated as the organization which is authorized to act in matters of relief under said Treaty," and, furthermore,

Whereas, In the Revised Treaty of Geneva, 1906, in Article 27, it is provided that "the signatory powers whose legislation should not now be adequate, engage to take or recommend to their legislatures such measures as may be necessary to prevent the use by private persons or by societies other than those upon which this Convention confers the right thereto of the emblem or name of the Red Cross or Geneva Cross,"

Be it Resolved. That the Executive Committee of the American National Red Cross requests that all hospitals, health departments and like institutions kindly desist from the use of the Red Cross created for the special purpose mentioned above, and suggests that for it should be substituted some other insignia, such as a green St. Andrew's Cross on a white ground, to be named the "Hospital Cross," and used to designate all hospitals (save such as are under the Medical Departments of the Army and

Navy and the authorized volunteer aid society of the Government), all health departments and like institutions, and, further,

Be it Resolved, That the Executive Committee of the American National Red Cross likewise requests that all individuals or business firms and corporations who employ the Geneva Red Cross for business purposes, kindly desist from such use, gradually withdrawing its employment and substituting some other distinguishing mark.

AMERICAN PHARMACEUTICAL ASSOCIATION.—At the recent annual meeting of the American Pharmaceutical Association the following resolutions were adopted:

Whereas, The American Medical Association, the American Pharmaceutical Association and the National Association of Retail Druggists together with many State and local organizations and journals in both professions have been for some years endeavoring to bring about a return to the practice of medicine based on the Pharmacopoeia, and

Whereas, The medical colleges are represented on the Committee of Revision of the U. S. Pharmacopoeia, and

Whereas, It is manifest to the thoughtful men both in medicine and pharmacy that a very large number of medical men might be better informed regarding the Pharmacopoeia as a book of reference and standards. Be it therefore

Resolved. That it is the sense of the American Pharmaceutical Association in convention assembled, that a great advance in the ethical practice of medicine and pharmacy will be made when the medical colleges make the Pharmacopoeia a prescribed text-book or book of reference and require a familiarity with it in their examinations.

Resolved, That we request the governing authorities of all medical colleges in the United States to put into force such a ruling in their respective institutions as will insure in future classes a well-grounded knowledge of materia medica and Pharmacognosy, as set forth in the Pharmacopoeia.

Resolved, That the General Secretary be directed to transmit a copy of these resolutions to each medical college in the United States and to the medical and pharmaceutical press.

AMERICAN ACADEMY OF MEDICINE.—The American Academy of Medicine announces a special meeting to be held in Pittsburg, Penn., on Thursday and Friday, January 2 and 3, 1908. The purpose of the meeting is to give a full, free, frank and rounded discussion on the essentials of a medical education. The Academy issues the following circular:

Certain phases of this subject have been discussed, and admirably, by the Council on Education of the American Medical Association, the Association of American Colleges, and by both Confederations of State Medical Examining and Licensing Boards. Our purpose is neither to restate nor combat what has been done, but to present a question which has been touched only incidentally or not at all.

Without raising the question, whether it be desirable for all medical schools to take the stand of Johns Hopkins and Harvard and insist upon the first degree as an essential qualification for matriculation, it certainly is impracticable at the present. Notwithstanding, it is believed by many that a college course should be completed before matriculating in a medical school. As at present the better prepared college graduate is penalized, because of his preparation, by the average medical school, unless the "Combined course" in some of the universities be an exception. The

fact is not a wilful act of the medical schools but a result of the lack of coordination and of system.

The suggested Conference is to consider the problem of medical education for the college-bred. To this end the effort will be made to determine the actual condition, formulate the problem, and attempt its solution. The so-called "minimum requirements," and the short courses to prepare students for the prospective advance in entrance requirements to the medical college, need not concern us, nor even the combined courses in an institution having an undergraduate and a medical department. We will seek for some plan where, by an economic disposal of time, the foundations of a broad culture can be given by the college, and the proper professional training by the medical college within a reasonable period and applicable to the unattached college and independent medical school.

It is hoped that the Conference will accomplish more than a mere discussion, but that conclusions reached will be so formulated as to permit an active propaganda, under the direction of the American Academy of Medicine, should it be thought best, thus obviating the burden of a new organization.

The plan of the Conference is to divide the subject into two parts for the convenience of discussion, as follows:

I. The Medical Curriculum.

1. A Criticism upon the Present Curriculum, by Henry Beates, Jr., M. D., of Philadelphia, President of the Medical Council of Pennsylvania.
2. The Essentials of a Medical Education, by Murray Galt Motter, A. M., M. D., of Washington, D. C., Secretary of the National Confederation of State Medical Examining and Licensing Boards.
3. The Danger of Attempting Too Much, by Frederick Henry Gerrish, M. D., LL. D., of Portland, Me., Professor of Surgery, Medical Department of Bowdoin College.

II. Preparing for Medicine.

1. What Can the College and Fitting School Do to Aid in the Study of Medicine? probably by the Rev. William M. Crawford, LL. D., Meadville, Pa., President of Allegheny College.
2. What Are the Essential Subjects of General Information to Be Possessed by a Physician? By the Rev. James D. Moffat, D. D., LL. D., of Washington, Penn., President of Washington and Jefferson College.
3. How Can the "School Life" of the Intending Physician Be Arranged to Produce the Desired Training with the Most Economic Expenditure of Time?—Essayist to be announced.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.—Progress along all lines connected with the International Congress on Tuberculosis which is to take place in Washington from Sept. 21 to October 12, 1908, was shown by the reports presented at a meeting of the Committee of Arrangements, held in New York, at the Associated Charities Building, Monday evening, October 28. Dr. Lawrence F. Flick, of Philadelphia, Chairman of the

Committee, presided, and the other members present were Dr. Joseph Walsh, Philadelphia, Secretary; Dr. John S. Fulton, Washington, Secretary-General; Mr. William H. Baldwin, Washington; Dr. Hermann M. Biggs, New York; Dr. Frank Billings, Chicago; Mr. Edward T. Devine, New York; Mr. Livingston Farrand, New York; Dr. J. C. Greenway, Greenwich, Conn.; Dr. Chas. J. Hatfield, Philadelphia; Dr. Abraham Jacobi, New York; Dr. Alfred Meyer, Mrs. James E. Newcomb, New York; Gen. Geo. M. Sternberg, Washington, and Dr. Wm. H. Welch, Baltimore.

In connection with his account of the progress made in the preliminary arrangements for the International Congress on Tuberculosis, Dr. John S. Fulton, the Secretary-General, reported that ten distinguished foreigners have consented to participate in the series of special addresses that are to form a part of the program. The names of these eminent specialists follow: Dr. R. W. Philip, Edinburgh; Dr. C. Theodore Williams, London; Dr. Arthur Newsholme, Health Officer, Brighton, England; Dr. C. H. Spronck, Utrecht, Holland; Dr. Karl Turban, Davos-Platz, Switzerland; Dr. Gotthold Pannwitz, Charlottenburg; Dr. Emil von Behring, Marburg; Dr. A. Calmette, Pasteur Institute, Lisle, France; Dr. Maurice Letulle, Paris, and Dr. S. Kitasato, Tokyo, Japan.

Dr. Fulton also reported that up to the date of the meeting, the Governors of twenty-three States had lent official auspices to the Congress. This not only insures official representation so far as that many States are concerned, but it insures an active organization in each of these States, that will be interested in the Congress. The States in which this action has been taken so far are California, Utah, Montana, North Dakota, Minnesota, Wisconsin, Illinois, Iowa, Indiana, Michigan, Ohio, Kentucky, Kansas, Tennessee, South Carolina, North Carolina, Maryland, New York, Massachusetts, Vermont, Maine, West Virginia, Missouri.

Reporting on the formation of State committees, the Secretary-General said that such committees had been appointed in nearly all of the States in the United States; that several have already organized and are earnestly at work. He reported also that replies have been received from various foreign countries in reference to the appointment of committees, and the replies indicate that the countries addressed will be represented in nearly every instance by exhibits as well as by delegates.

PERSONALS.—Dr. G. SCOTT TOWNE (A. M. C., '99), of Saratoga Springs, N. Y., sailed on the *Cedric* October 10th, for several months' study of surgery in London, Edinburgh and Paris.

—Dr. JAMES F. ROONEY (A. M. C., '98) has removed to 303 Madison avenue, Albany.

—Dr. MALCOLM DOUGLASS (A. M. C., '05) has opened his office at 198 Washington avenue, Albany.

—Dr. THOMAS A. RYAN (A. M. C., '93) has returned from Europe.

—Dr. E. G. WHIPPLE (A. M. C., '06), after several months as resident physician at Seton Hospital, has started practice at 96 West Main street, Malone, N. Y.

—Dr. W. N. SIMONS (A. M. C., '06) has moved from Canajoharie to St. Johnsville, N. Y.

—Dr. N. A. PASHAYAN (A. M. C. '01) has opened his office at 1104 State street, Schenectady, N. Y.

—Dr. WINFIELD S. KILTS (A. M. C., '06) has removed from Richmond Hill, Long Island, to East Springfield, N. Y.

—Dr. CHARLES G. LYON (A. M. C., 1900) has removed from Harpursville, N. Y., to Binghamton, N. Y.

MARRIED.—Dr. EDWARD SHEPARD SMITH (A. M. C., '99) was married early in October, his bride being Miss CLARISSA BANCROFT, daughter of Mr. and Mrs. William E. Gibbs, of Westfield, Mass.

—Dr. GEORGE W. PAPEN, JR. (A. M. C., '05) and Miss LILA RANSOM were married at the bride's home in Lynn, Mass., on October 8, 1907. Dr. Papen is associated with his father in practice in Albany.

—Dr. WILLIAM M. DWYER (A. M. C., '05) and Miss EDNA GERTRUDE DONLON were married in Amsterdam on October 29, 1907. Dr. and Mrs. Dwyer will reside in Amsterdam.

DIED.—Dr. HENRY LILIENTHAL (A. M. C., '78) died at his home, Albany, N. Y., October 6th, aged fifty-three years. A widow, one daughter and four sons survive.

—Dr. BYRON E. OSBORN (A. M. C., '54), of Auburn, N. Y., died in Rochester in September, 1907.

—Dr. W. L. DEGOLIA (A. M. C., '82) died at Crossville, Tenn., September 19, 1907, aged fifty-one years.

—Dr. JOHN DIXON CRANE (A. M. C., '05), of the staff of the Central Islip State Hospital, Long Island, died at Brentwood, Long Island, November 8, 1907, after an illness of four months.

—Dr. WILLIAM MARTIN LAWLOR (A. M. C., '67) died at his home in San Francisco, October 21, 1907.

—Dr. JOHN RUSSELL (A. M. C., '64), Assistant Surgeon, New York Volunteers, Infantry, died at Denver, Colorado, October 28, 1907.

In Memoriam

BYRON E. OSBORN, M. D.

Byron E. Osborn, M. D., at the time of his death, the oldest practitioner in Cayuga County, died at Rochester, N. Y., September 10th, 1907. He was born near Hannibal, Oswego County, N. Y., March 15th, 1832. He was the son of William and Sabrina (Ketcham) Osborn. His father was of English ancestry, a native of Saratoga County, N. Y. He served in the war of 1812. Dr. Osborn received his early education at Fulton, N. Y., and at Falley Seminary; he taught school for a time in Oswego County. He began the study of medicine with Dr. C. G. Bacon of Fulton and attended lectures at Geneva and at Albany, graduating at the latter place in the class of 1854. He very soon began practice in Oswego, N. Y. On

October 12th of the same year he was united in marriage to Miss Ruth E. Harmon. In Oswego he was health officer for a time and for two years had charge of the Marine Hospital at that place. He then removed to Wapum, Wis., remaining two years, when he went to St. Joseph, Mo., where he practiced until 1861.

Dr. Osborn was a democrat in politics at that time, but his sympathies were antislavery and he felt that the union of the states should be maintained at any price. Those opinions made it necessary to leave St. Joseph, and he departed in the night, going North on horseback. After a few days he met some Iowa troops, and he joined his fortunes with them. They were able to go to St. Joseph, where a number of companies of Union troops were formed. Dr. Osborn became surgeon to these troops and established the first hospital at St. Joseph. After six months he left the State service for that of the United States, and was assigned to duty with the first regiment of Missouri Cavalry. By order of Brigadier-General Loan he established a post hospital at Lexington, Mo. He remained there more than two years, when on account of ill health he was obliged to resign. He received honorable discharge, retiring with the rank of major. He then came to Auburn, his wife's old home, and after his health improved began practice in Throopsville, near Auburn. He remained there some years finally moving into Auburn to finish his professional life.

He is survived by Mrs. Osborn and two sons. He was a member of Seward Post, Grand Army of the Republic; in his later years a prohibitionist in politics. He was a member of the First Baptist Church of Auburn, N. Y.

Dr. Osborn had some ability as an inventor. One of his appliances was a poison cabinet, for druggists' use, so arranged that when a bottle was removed a bell would ring until it was replaced.

He obtained a patent upon an electric traction system which does away with overhead wires, also of a telephone in railway cars operated by his traction system.

SHELDON VOORHEES.

WILLIAM S. DeGOLIA, M. D.

Dr. William S. DeGolia, a graduate of the Albany Medical College, of the class of 1882, died at his home in Crossville, Tenn., on September 13, 1907, of multiple neuritis, after suffering with the disease for six months. He was in his fifty-second year.

Dr. DeGolia was born in Batchellerville, Saratoga County, N. Y. After graduating he located in Chattanooga, and in the early nineties removed to Crossville, where he continued in active practice until he died. He was a member of Crossville lodge A. F. and A. M., of the Odd Fellows, K. of P. and Red Men. He was made postmaster in 1898 and continued to administer this office until his death. He was also surgeon for the Southern Railway.

Dr. DeGolia had established himself firmly in the affections of the community in which he lived, and the expressions of loss sustained in his death are sincere and unaffected.

Current Medical Literature

MEDICINE

Edited by Samuel B. Ward, M. D., and Hermon C. Gordinier, M. D.

Very Light Percussion of the Heart Tested on the Cadaver. (Die Schwellenwertperkussion des Herzens an der Leiche.)

VON ARTHUR SIMONS. *Deutsches Archiv für klinische Medizin*, 1906, LXXXVIII, 246.

Almost all authors recommend heavy percussion for determining the true outline of the heart. Ewald was probably the first to employ very light percussion for this purpose. His article on the subject was published in 1877, but seems to have been quite generally forgotten. Simons quotes his original description of the method: "A method which depends on the law of the 'Schwellenwert,' a psycho-physical law. The least perceptible stimulus, the so-called Schwellenwert, since it passes suddenly from negative to positive, must cause the greatest change of perception, that is, from the perception of nothing to something." This is more easily perceived than slight variations in the intensity of a stimulus already acting.

The author has tested this method on twenty-five bodies, the results being afterward confirmed by dissection. He considers the method of great value in that it is very easily learned, can be carried out in a uniform manner each time and disturbs the patient but very little.

Psychologically the method depends on the reinforcement of one sense by another. Both hearing and touch aid in the determination of the correct heart boundaries.

The author refers to nearly all the literature that has appeared regarding the percussion of the heart and discussed his own results at considerable length.

Report on the Cardiac Conditions in Tuberculous Cases.

G. W. NORRIS. *Second Annual Report of the Henry Phipps Institute.*

Tables are given showing the pathological conditions encountered in 143 autopsies. Evidences of pericardial inflammation were encountered in ten per cent. of cases. This is not astonishing when we consider the frequency with which neighboring structures are the seat of disease, i. e., pleurea, lungs, bronchial lymph glands. In none of the cases had urgent symptoms been produced by the condition.

Sclerosis of the valvular endocardium was met with frequently, though usually slight in amount. Vegetations were found but were rare. The heart muscle was pale and flabby in twenty-eight cases, fatty in six; in thirteen cases the heart was small. Dilatation of the right heart occurred in nineteen cases.

Clinical histories of 2,344 tuberculous cases revealed interesting conditions.

Accentuation of the pulmonary second sound occurred in 821 cases.

Reduplication of the second sound occurred 949 times.

Arteriosclerosis was found only fifty-seven times (about two and five-tenths per cent.).

Practically all observers have found blood pressure diminished in tuberculosis.

The first sound of the heart lacked muscular tone in 269 cases.

A large proportion of the heart murmurs heard antemortem were probably the result of relative insufficiency from relaxation of the mitral sphincter, as organic lesions are not found at autopsy with sufficient frequency to account for the murmurs heard during life.

A persistently rapid pulse, over 130, was found in 156 cases. Norris confirmed the established but insufficiently recognized fact that a persistently rapid pulse is a very unfavorable symptom in a case of tuberculosis.

The tables demonstrate frequent coincidence of pulmonary tuberculosis and valvular heart disease, organic changes occurring in ten per cent. of cases. In one and three-tenths per cent. of 51,000 cases from literature and the record of the institute, the conditions coexisted and among 8,151 autopsies, both conditions found in three and nine-tenths per cent.

Functional murmurs were also common. Tuberculosis is the commonest cause of non-congenital cardiac displacement. Complete dextrocardia was found in five instances.

Valvular lesions if well compensated apparently exert no special influence upon the tuberculosis process; but cardiac weakness and functional incapacity, whether the result of congenital hypoplasia, dilatation, toxemia or myocardial degeneration, exercise a most deleterious influence. The strain upon the heart in athletic contests, which calls forth hypertrophy and dilatation, uses up too much of the normal reserve force, and when, in the course of disease, a call comes for additional and prolonged muscular power, the depleted physiological capital is no longer commensurate with the demands. Norris records serious tuberculosis in athletic young men.

The condition of the heart is of no less importance than the state of the digestion and both conditions are in no small measure interdependent. Digestion will prove if the heart is looked after, and the heart will gain if constipation, flatulency, etc., are overcome.

A table is appended showing the clinical data, macroscopic appearance and microscopic examination of the heart in nineteen cases. The microscopic changes in most cases were not marked.

Dr. Norris uses drugs as little as possible in the treatment of cardiac conditions in tuberculosis. Rest in bed, regulation of the bowels, and similar measures were preferred. Nauheim baths were of advantage in cases with dilatation. An ice bag to the precordium was found useful in many cases.

Nitroglycerin, strychnine and caffeine have been of benefit, the first in spite of the fact that theoretically it is not indicated, as the blood pressure is already subnormal.

Digitalis, strophanthus and camphor do little good except in cases in which there is organic valvular disease.

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